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116-A Smith Hall
University of Washington
Seattle 5, Washington

Executive Office
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THE CASE FOR THE STUDY OF SMALL GROUPS

FRED L. STRODTBECK

University of Chicago

PUBLISHED together in this issue are fourteen papers which place a central emphasis on the nature and consequences of face-to-face interaction. These papers, which might ordinarily have been spread through several issues, are collected into a special issue in order to direct attention of members of allied disciplines, like anthropology, and psychology, to the variety and extent of sociology's present commitment in the small group field. Within the ranks of sociology it is hoped that this issue may help to capture the minds and talents of members who have not previously concerned themselves with small group research.

In the face of the tremendous growth of research activity in the small groups field, one cannot successfully maintain that small group inquiry is in any sense a fringe activity of the social sciences. A recent bibliography of small group research listing 1407 items reveals, when classified by periods, that from one item per decade at the turn of the century the rate of production of small group items has increased to three per week at the present.[1]

It is estimated that there are approximately 200 courses being taught in sociology and psychology departments, which courses, despite a wide variety of course titles, are primarily directed to the study of small group phenomena. There are an additional 1100 courses concerned with the study of groups, and thus constitute a potential market for small group readings.[2] It is understood that a recent collection of small group papers drawn from different schools of small group research but labeled simply, *Group Dynamics,* has proved to be a scientific best seller.[3]

Period	Items Per Year
1890–1909	1
1910–1919	1
1920–1929	11
1930–1939	21
1940–1944	31
1945–1949	55
1950–1953	152

The difficult but not insurmountable problem of abstracting and digesting this runaway growth of activity has not been thoroughly met, but aids for the harassed are being developed. In addition to the Cartwright and Zander collection mentioned above there is a forthcoming collection being edited by Hare, Borgatta and Bales.[4] Roseborough, and Argyle, as well as recent copies of the *Annual Review of Psychology,*

[1] Fred L. Strodtbeck and A. Paul Hare, "Bibliography of Small Group Research (from 1900 through 1953)," *Sociometry,* XVII (1954), pp. 107–178.

[2] From an estimate prepared by A. Paul Hare based upon the catalogues of 75 colleges.

[3] Dorwin Cartwright and Alvin F. Zander (eds.), *Group Dynamics: Research and Theory,* Evanston: Row, Peterson and Co., 1953.

[4] To be published by Alfred A. Knopf, Inc., March 1955.

represent helpful surveys of the field.[5] The chapters by Kelly and Thibaut, Homans and Riecken, Gibb, Lippitt and Heyns, and Lindzey and Borgatta in the *Handbook of Social Psychology,* edited by Lindzey, go beyond the survey level and provide needed syntheses of a type not elsewhere available.[6] While the materials produced during the past six years appear inchoate and still inadequately synthesized, one cannot deny that a sizeable and serious investment of resources has been made.

For sociologists of the "knowledge for what?" variety, the appeal of the small group field should be particularly strong. The growth of small group research and the availability of agencies willing to invest resources in the solution of their problem, are inseparably related. A bomber costs several million dollars and may conceivably be lost by failures in the interpersonal relations of the crew. Under these conditions sizeable investments in the investigation of interpersonal relations can be easily rationalized. In this issue, for example, Torrance's paper grows directly from air crew research and four other papers grow from developmental research sponsored by military agencies. A search for the way to better use the ward milieu is of such importance for in-patient psychotherapeutic administration that funds are becoming increasingly available for applications of small group theory and technique in medical contexts.[7] Sherif's work on intra-group conflicts,[8] the Lewin work on food-use patterns,[9] Bales' early interest in Alcoholics Anonymous,[10] and the current work in prisons[11] are further examples of practical applications. As the Cottrell-Foote study of the development of interpersonal competence among family members gains momentum, there will be indeed a wide front along which small group theory and technique serves practical concern.[12]

For the sociologist of the "science for the beauty of it" persuasion, small group studies should also exert a strong appeal. Chapple, in his hard-headed positivistic conviction that the fallibility of the observer should be eliminated, created in his inter-action chronograph a milestone in the growth of small group techniques.[13] Though Chapple's

[5] Mary E. Roseborough (Salisbury-Rousewell), "Experimental Studies of Small Groups," *Psychological Bulletin,* 50 (1953), pp. 275–303, and Michael Argyle, "Methods of Studying Small Social Groups," *British Journal of Psychology,* XLIII (1952), pp. 269–279, are helpful for their contribution to classification in the field as well as of value for the interpretative material they contain.

[6] Gardner Lindzey (ed.), *Handbook of Social Psychology,* Cambridge: Addison-Wesley Publishing Co., 1954.

[7] William Caudill and Edward Stainbrook, "Some Covert Effects of Communication Difficulties in a Psychiatric Hospital," *Psychiatry: Journal for the Study of Interpersonal Processes,* 17 (1954), pp. 27–40; W. Caudill, F. C. Redlich, H. R. Gilmore, and E. B. Brody, "Social Structure and Interaction Processes on a Psychiatric Ward," *American Journal of Orthopsychiatry,* XXII (1952), pp. 314–334; G. Devereux, "The Social Structure of a Schizophrenic Ward and Its Therapeutic Fitness," *Journal of Clinical Psychopathology,* 6 (1944), pp. 231–265, "The Social Structure of the Hospital as a Factor in Total Therapy," *American Journal of Psychiatry,* 19 (1949), pp. 492–500; H. Rowland, "Interaction Processes in a State Mental Hospital," 1 (1938), pp. 323–337, "Friendship Patterns in a State Mental Hospital," *Ibid.,* 2 (1938), pp. 363–373; M. S. Schwartz and A. F. Stanton, "A Social Psychological Study of Incontinence," *Psychiatry,* 13 (1950), pp. 399–416; A. F. Stanton and M. S. Schwartz, "Observations on Dissociation as Social Participation," *Ibid.,* pp. 339–354; H. M. Newburger, "Sociometric Evaluation of Group Psychotherapy," *Group Psychotherapy,* 6 (1953), pp. 7–20.

[8] Muzafer Sherif and Carolyn W. Sherif, *Groups in Harmony and Tension, An Integration of Studies on Intergroup Relations,* New York: Harper & Brothers, 1953.

[9] K. Lewin, "Forces Behind Food Habits and Methods of Change," *Bulletin of the National Research Council,* 108 (1943), pp. 35–65.

[10] Robert F. Bales, "Social Therapy for a Social Disorder—Compulsive Drinking," *Journal of Social Issues,* I (1945), pp. 14–22, "The Therapeutic Role of Alcoholics Anonymous," *Quarterly Journal of Studies of Alcohol,* 5 (1944), pp. 267–278.

[11] N. S. Hayner, and E. Ash, "The Prisoner Community as a Social Group," *American Sociological Review,* 4 (1939), pp. 362–369; E. Jacobson, "Observations on the Psychological Effect of Imprisonment on Female Political Prisoners," in *Searchlights on Delinquency* (K. R. Eissler, Ed.), New York: International Universities Press, 1949; S. K. Weinberg, "Aspects of the Prison's Social Structure," *American Journal of Sociology,* 47 (1942), pp. 717–726.

[12] See *Family Study Center,* Second Annual Report, Chicago: The University of Chicago, 1953; Leonard Cottrell and Nelson N. Foote, *New Directions for Research in the Family,* Chicago: The University of Chicago Press, (in press).

[13] See especially p. 23, "Nor shall we try to include in the class of phenomena to be studied anything more than appears in the action of the

contribution has been somewhat passed by (save for practical applications in employee selection), the real esthetes in the field find refreshing clarity in the severe reductionist simplicity of the goal he sought.[14] Moore and Anderson's work (an application of which is reported in this issue) involving use of the sentential calculus in the development of standard problems possesses an unusual degree of formal rigor. The deceptive simplicity of the Bavelas paper on possible channels of communication between persons and the restricted communication problem-solving investigation which followed from this constitutes an effort of the highest originality.[15] The interweaving of Bales' twelve categories and Parsons' pattern variables in their treatment of the small group as a social system has the "now you have it, now it's gone" quality of a good abstractionist painting.[16] The small group field has much to please the mind.

To persons who wish to mathematize the study of social behavior, one might observe that, second only to the attitude field, no other aspect of sociology is so far along at this time. But lest possible contributors turn away, one should hasten to add that the beginning of the mathematization of small group theory is scarcely under way and that in no aspect of sociology is the prospect of a potential contribution so bright. Simon's structuring of a Homans' model for descriptive presentation is a distinguished starting point.[17] Rashevsky has recently been given a creative recasting and may well deserve wider study by small group students.[18] Many fields of mathematics are being used,[19] but the real new impetus in the field is the stochastic approach. Bales has reported an early stochastic model which is only primitively mathematized,[20] and a recent paper by Simon develops further this tradition.[21] In this issue, the Hays-Bush paper forms a bridge from the Bush-Mosteller learning theory models to group behavior models. At several centers the mathematization of small group research will be given greatly increased attention during the coming year.

There may be some who believe that small group analysis has little to contribute to one interested in studying social behavior in a naturalistic environment. Sherif has once and forever destroyed the validity of the cage-keeper versus observer dichotomy. His argument may be read either there are some effects you need long term interaction in naturalistic environments to produce or there are some aspects of operating group structure in naturalistic surroundings which require laboratory-perfected small group techniques to confirm. In either instance

individuals that we observe. The method we are following proscribes our treating anything not objectively observed . . .", Elliot D. Chapple, "Measuring Human Relations: An Introduction to the Study of Interaction of Individuals," *Genetic Psychological Monographs,* 1940, pp. 3–147.

[14] E. D. Chapple, "Applied Anthropology in Industry," in *Anthropology Today, An Encyclopedic Inventory* (A. L. Kroeber, Ed.), Chicago: University of Chicago Press, 1953, pp. 826–827.

[15] A. Bavelas, "A Mathematical Model for Group Structures," *Applied Anthropology* (1948), pp. 16–30, "Communication Patterns in Task Oriented Groups," *Group Dynamics: Research and Theory* (Dorwin Cartwright and Alvin F. Zander, Eds.), Evanston: Row, Peterson and Co., 1953.

[16] Talcott Parsons, Robert F. Bales, and Edward A. Shils, *Working Papers in the Theory of Action,* Glencoe: The Free Press, 1954, pp. 63–110.

[17] See Herbert A. Simon, "A Formal Theory of Interaction in Social Groups," *American Sociological Review* (April 1952), pp. 202–211; and a yet unpublished parallel analysis of Festinger's work by the same author and Harold Guetzkow, "Communication Resulting from Pressures Toward Uniformity in Groups" (unpublished manuscript), Graduate School of Industrial Administration, Pittsburgh: Carnegie Institute of Technology, Jan. 16, 1953.

[18] James S. Coleman, "An Expository Analysis of Some of Rashevsky's Social Behavior Models," in *Mathematical Thinking in the Social Sciences,* (Paul F. Lazarsfeld, Ed), Glencoe: The Free Press, 1954, pp. 105–165. See also C. P. Leeman, "Patterns of Sociometric Choice in Small Groups," *Sociometry,* 15 (1952), pp. 220–243.

[19] Frank Harary and Robert Z. Norman, *Graph Theory as a Mathematical Model in Social Science,* Research Center for Group Dynamics, Ann Arbor: University of Michigan, 1953; R. M. Thrall, "Ranking of Community Organization," Engineering Research Institute, assisted by R. L. Wine and W. Feit, Ann Arbor: University of Michigan, December 1952; L. Katz, "An Application of Matrix Algebra to the Study of Human Relations Within Organizations," Institute of Mathematical Statistics, University of North Carolina, Mimeography Series, 1950; R. D. Luce and A. D. Perry, "A Method of Matrix Analysis of Group Structure," *Psychometrika,* 14 (1949), pp. 95–116, "Connectivity and Generalized Cliques in Sociometric Group Structure," *Psychometrika,* 15 (1950), pp. 169–190.

[20] Talcott Parsons *et al., op. cit.,* pp. 136ff.

[21] Herbert A. Simon and Harold Guetzkow, *op. cit.*

the exclusive claim to our attention of one approach in contrast to the other is lost. Sherif and Harvey's use of dart-throwing estimates as a measure of group status, inspired as it was by Doc's bowling in *Street Corner Society,* is a most pertinent example of the interchange which is always to some greater or lesser degree possible between the two types of studies.[22] In Sherif's recent Robbers Cave Study the laboratory in the field has reached its highest development.[23]

Until about 1937 the aspect of small group research most actively applied in naturalistic surroundings was sociometry. Moreno and his group worked to transform given relationships in the community into relationships which were more gratifying and believed to be more therapeutic. He has recently described this period as the "hot" sociometry period and contrasts it with the "cold" sociometry (1937 to 1950) which was characterized by "research for its own sake." [24] It was during this latter period that sociometric ratings, given after (and in some cases, before) experimental treatments, came to be a standard technique for obtaining a reading on experimental effects. The most recent phase of sociometry, called by Moreno the "perceptual" phase, is characterized by the systematic use which is made of the guess of the subject about the choices of others. This line of research has recently been developed at Harvard by Tagiuri.[25] Stretching from the mid-twenties to the present, Moreno's techniques have become inextricably interwoven with the development of small group thinking. It is particularly appropriate that it is possible to include in this issue the Riley, Cohn, Toby and Riley paper in which the "perceptual" phase of sociometry is extended to a near-articulation with social system thinking.[26]

In the heavily statistical arguments of some small group papers the appreciation of the role of careful observing and clear writing seems minimal indeed. This is undoubtedly a shortcoming. Homan's paper in the present issue helps us better understand what we may learn from the careful description of small group behavior. To read Homans' article properly is an active process. We are all observers of work-behavior and of the interrelation between the motivation for work and off-the-job social determinants. Can we make sense of the knowledge we have as Homans does, and if so, what implications does this process have for our explanatory models and research hypotheses? No greater error could be made than to believe we could ever operate without the insight which comes from the study of careful, disciplined observations.

To the person without extensive research funds, it is perhaps well to stress that not all small group research is expensive. The experimental room that Bales and Flanders describe in this issue would cost a sizeable amount even when built under the favorable condition of including it in a new building—this cannot be denied. But not all small group research has to be done in such rooms. A tape recorder is no longer a big investment. So long as the analysis is carried out directly from the tape, sizeable transcription costs are avoided. The notion of a laboratory as a fixed installation should be questioned. The laboratory may well become a kit of portable tools which can be carried into naturalistic surroundings. This approach is in many ways less expensive. Significant small group research can be done in connection with teaching situations.

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[22] O. J. Harvey, "An Experimental Approach to the Study of Status Relations in Informal Groups," *American Sociological Review,* 18 (1953), pp. 357–367. E. R. Hilgard, *et al.,* "Levels of Aspiration Affected by Relative Standing in an Experimental Social Group," *Journal of Experimental Psychology,* 27 (1940), pp. 411–421 anticipates some aspects of the Sherif-Harvey work.

[23] Muzafer Sherif, *et al.,* "Experimental Study of Positive and Negative Intergroup Attitudes Between Experimentally Produced Groups," *Robbers Cave Study,* Norman: The University of Oklahoma, 1954, (Lithoprint).

[24] J. L. Moreno, "Old and New Trends in Sociometry, Turning Points in Small Group Research," *Sociometry,* XVII (May, 1954), pp. 179–183.

[25] R. Tagiuri, "Relational Analysis: An Extension of Sociometric Method With Emphasis Upon Social Perception," *Sociometry,* XV (1952), pp. 91–104.

[26] See in addition to the paper in this issue, Matilda W. Riley, John W. Riley, Jr., and Jackson Toby, *Sociological Studies in Scale Analysis: Applications, Theory, Procedures,* New Brunswick: Rutgers University Press, 1954.

In this issue, while we cannot be entirely proud of this, the subjects for seven of the papers were students.

The set of persons who are interested in what is described as "theory" is quite heterogeneous and must be broken into smaller sets before the case for small group studies can be adjusted to their interests. Those interested in the history of theory probably recognize that much must be done to disentangle from 19th centruy thinking the foreshadowing of our present activity in the small group field. Moreno has recently called attention to a passage in Marx which provides a clear statement of social facilitation in co-working groups,[27] and Moreno goes further to suggest that there was in fact a link between this passage and the work of Mayer and Moede.[28] Simmel's and Von Weise's interest, shared widely by their contemporaries, in the matter of coalitions in three person groups has been carried further in recent investigations.[29] Patches of continuity show through, but the whole pattern is not at all clear. While a good historical perspective on small group studies might well inform us of some of the fruitless and needless replications of convenient research paradigms in the past, it is also to be hoped, that as a protection against similar errors in the future, students of the history of theory will in greater number turn their attention to current research.

Those who view the task of theory as the tidying of definitions will find small group research greatly in need of their services. Some attention has recently been given the term cohesiveness,[30] but in general, terms with broad meaning in everyday language are used to describe a particular reading in the experimental context. In the opening paragraphs of many articles the narrower interpretation of everyday concepts is clear, but in summary and synthetic statements the broader meaning is reintroduced with a resultant loss of precision in communication. In this issue, the March paper illustrates how an improved terminology for dealing with norms contributes to the clarification of discussions of conforming behavior. Many similar jobs remain to be done.

There are still others who use the term "theory" to indicate that they are interested in "taking the giant step." Olmsted's paper in this issue and the work of Parsons and Bales, to which it is closely related, have at their base the broadest conceptions of social systems and human action.[31] The Lewin–inspired field theory formulations provide analytic categories which loosely accommodates individual and group behavior determinants at a high level of generality, and Homans' propositions are so phrased as to have broad applicability to various human interaction situations. There are both precedents for utilization of small group observation in discussion of wide-ranging theoretical formulations, and prospects that the relating of data to highly general models will be given increased attention in the future.

The appeal of small group studies should perhaps be strongest for the theorist of the middle range. In the Borgatta, Bales and Couch paper in this issue, data collected as part of a much larger design are used to call attention to what they have chosen to call the "great man" theory of leadership. In other "middle range" examples the interdependence between the original design

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[27] Karl Marx, *Capital, A Critique of Political Economy,* New York: Modern Library, 1933, Pt. IV, p. 358, cited in J. L. Moreno, *op. cit.,* p. 179.

[28] A. Mayer, "Ueber Einzel-und Gesamtleistung des Schulkindes" (On the School Child's Work Among and In the Group), *Archiv. F. D. Ges. Psycholo.,* Band I, 1903, pp. 276–416; W. Moede, *Experimentelle Massenpsychologie* (Experimental Group Psychology), Leipzig: Hirzel, 1920.

[29] T. M. Mills, "Power Relations in Three Person Groups," in *Group Dynamics: Research and Theory,* (D. Cartwright and A. F. Zander, Eds.), Evanston: Row, Peterson and Co., 1953, pp. 428–442; F. L. Strodtbeck, "The Family as a Three Person Group," *American Sociological Review,* 19 (1954), pp. 23–29.

[30] Leon Festinger, Kurt Back, Stanley Schachter, Harold H. Kelly, and J. W. Thibaut, *Theory and Experiment in Social Communication,* Research Center for Group Dynamics, Ann Arbor: University of Michigan, 1940, esp. pp. 3–17; Neal Gross and William E. Martin, "On Group Cohesiveness," *American Journal of Sociology,* 57 (1952), pp. 546–554; Stanley Schachter, "Comment," *American Journal of Sociology,* 57 (1952), pp. 554–562; N. Gross and William E. Martin, "Rejoinder," *American Journal of Sociology,* 57 (1952), pp. 562–564; Michael Argyle, *op. cit.;* Robert S. Albert, "Comments on the Scientific Function of the Concept of Cohesiveness," *American Journal of Sociology,* LIX (1953), pp. 231–234.

[31] See Olmsted's paper for citation in this issue.

and the limited theory is even more closely established. Festinger, in his original cohesiveness studies (represented in this issue in some degree by the Kelly and Shapiro, Emerson, and Hochbaum papers) and his more recent "theory of social comparison processes" papers, has developed great skill in building explicitly into his research design operations which are analogues of elements of his theory.[32] While it is perhaps abstractly desirable to anticipate interpretations of all possible experimental results before the experiment begins, there is the practical problem of wringing information from an expensive set of data which has relevance to multiple hypotheses. Skill (like Borgatta's) at starting a complicated data-generating experiment going, and thoroughly exploiting it, is coming to share recognition formerly reserved solely for skill in design (like Festinger's) which results in little freedom for discovery of unanticipated relationships.

In this issue there are inconsistencies of finding which the aspiring theorist of the middle range might well use as training material for the development of his analytic powers. Mills argues that the prior work on social cohesiveness has proceeded with an undifferentiated conception of group structure. If, in three-person groups, there is in fact a tendency toward schism of the sort demonstrated by Mills' earlier work, then would not a person isolated by a shift in coalition in a three-person group have a structural prop for his remaining an isolate. Under such conditions, would not a high percentage of isolates resist the pressure to conform. In pursuit of this line of reasoning, Mills' empirical inquiry leads to an indication that maximum active resistance to change in the coalition which tends to isolate him is offered by the dependent person with low status. Hochbaum finds that subjects with a high perception of their competence tend more strongly to resist pressures to conform. The Kelley-Shapiro paper is in the locus of the Mills and Hochbaum contribution. They find that members who value their membership highly are highly variable in their response to the conflict between achievement of the group goal and their personal response to pressures toward conformity. Following through the relationship between valuation of membership and conformity which Kelley and Shapiro suggest, it might well be that a different phrasing of the issues could bring all three studies into line. Even better, one might hope that a rethinking of these data would lead to a further project involving simultaneously conflict with group goals, shifting coalitions and pressures toward uniformity in three-person groups.

To join issues squarely in almost any small group controversy requires that the commentator satisfy himself that incongruous findings have arisen from differences which are reliable. Thus far, at least three of the replications of small group studies which have been completed have been almost as productive of new insights as the original studies were. In this issue Emerson's replication of Schachter's work illustrates well what in our eagerness we sometimes try to minimize, namely that the subjects used can make a difference in our findings. However, although important differences do arise in the replications, Emerson's replication of Schachter, Zetterburg's unpublished replication of Back, and Guetzkow's unpublished replication of Leavitt, have essentially confirmed the original studies.[33]

[32] Leon Festinger, "A Theory of Social Comparison Processes," *Human Relations,* 7 (1954), pp. 117–140; "Group Attraction and Membership," in *Group Dynamics: Research and Theory* (D. Cartwright and A. F. Zander, Eds.), Evanston: Row, Peterson and Co., 1953, pp. 92–101.

[33] For Guetzkow's study see "Organizational Development and Restrictions in Communication," (unpublished manuscript), Graduate School of Industrial Administration, Pittsburgh: Carnegie Institute of Technology, January 1954. Hans L. Zetterburg's study, "Cohesiveness as a Unitary Concept: Some Further Evidence," completed at Upsala, confirms Kurt Back, "Influence through Social Communication," *Journal of Abnormal and Social Psychology,* 46 (1951), pp. 9–23, with the increment that he refutes the hypothesis of additivity of consequences. Salk, Goodman, Lippett and others are also reported to have replicated Back without reversal at Michigan. Leonard Berkowitz's confirmation of S. Schachter, *et al.*, "An Experimental Study of Cohesiveness and Productivity," *Human Relations,* 4 (1951), pp. 229–238, will appear in the same journal. *Human Relations* will also carry the Organization for Comparative Social Research's "Cross-National Studies in Threat and Rejection," which were designed explicitly to gain the corroboration arising from replications in different cultures.

Some critics properly complain that generalization from twenty groups of sophomores to all of America is, insofar as this is done, nonscientific and regrettable. However, in defense of the work with small samples, it is probably much wiser to map broadly small group relationships with a significance criterion of .05, than to allocate resources for the establishment of parameters before we are assured of the importance of precise determinations. As incongruities in findings accumulate, more extensive experimentation can well be directed to the reconciliation of differences. There is every prospect that authors of papers in the present issue, with their average age in the low thirties, will for many years be deeply involved in the development and clarification of small group thinking. The case for the study of small groups will be most satisfactorily resolved if their enthusiasm can be sustained, their work criticized, and their ranks increased. Discriminating readers may help in all three respects.

THE COALITION PATTERN IN THREE PERSON GROUPS *

THEODORE M. MILLS

Harvard University

IN a paper published previously data were reported supporting Simmel's proposition that the three person group tends to segregate into a pair and a third party.[1] Moreover, it was found that when the pair becomes more than usually solidary the pattern of relationships tends to form a persistent and apparently interdependent role structure.[2] This paper reports a follow-through study which has two aims: first, to test experimentally the persistence and interdependence of the structure and, second, to specify, in a preliminary fashion, the conditions under which the structure is more persistent and those under which it tends to dissolve. The experimental method is applied to the first problem by using two trained role players who, as they interact with a naive subject, establish the coalition pattern, then artificially alter part of it. Analysis of the reactions of the subject enables us to assess the strength of the structural forces. The second problem is investigated by selecting subjects on the basis of their status classification and certain of their personality needs, by testing the effects of these variables upon their reaction and, consequently, upon the persistence or dissolution of the structure.

While continued research on a structural pattern like the coalition should increase our understanding of the dynamics of the three person group, it should also amount to a forward step in our thinking about social science theory. In the small group there exists a large share of the complex interplay between personality, group structure and sub-culture that is problematical

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[1] See Kurt H. Wolff (translator and editor), *The Sociology of Georg Simmel*, Glencoe, Illinois: The Free Press, 1950, Chapter 2, 3, and 4.

[2] Theodore M. Mills, "Power Relations in Three-Person Groups," *The American Sociological Review*, 18 (August, 1953), pp. 351–357; also published in *Group Dynamics*, Dorwin Cartwright and Alvin Zander (editors), Evanston, Illinois: Row, Peterson and Company, 1953, pp. 428–442. For evidence gathered in the family supporting the proposition see Fred L. Strodtbeck, "The Family as a Three-Person Group," *The American Sociological Review*, 19 (February, 1954), pp. 23–29.

in current theoretical formulations.[3] The contribution that small group research makes depends to a considerable extent upon our ability to bring these complexities, one by one, under experimental control. When, for example, the formal structural forces in the three person group are understood, the question of the interplay between them and a given set of personalities may be investigated in a fully systematic manner. It is with this general aim in mind that the two problems of this paper are investigated and discussed.

TESTING INTERDEPENDENCE WITHIN THE STRUCTURE

Procedures

Experimental procedures are designed to examine the conclusion of the previous paper that the coalition pattern is a fully interdependent power structure. To illustrate how this proposition might be tested, let us suppose that a member of a three person group, discussing a controversial issue, is first a party to a coalition, receiving support from his ally and aligned against the third. Then, through a switch of allegiance of his ally, he is rejected from the coalition. Even though the parties to it have changed, the alliance portion of the structure still exists. Whether the remaining relationships follow the pattern depends, however, upon what role the rejected member assumes. Does he maintain his original opinion on the issue, setting himself against the new coalition, or does he alter his stand in order to remain in agreement with the majority? Next, let us suppose, in another group in a similar setting, a member initially faces two members in coalition against him. Then in the course of the discussion one of the others switches his allegiance, inviting our member into a coalition against the third. What role does our member assume in response to the invitation? Does he become a member of the new coalition or does he reject the overtures of the member who has switched?

When we consider the two sequences together, it may be argued that if there are no differences between the roles of the two members when they are in the formal position of isolate and no differences between their roles when they are parties to the coalition, then the structural forces associated with the coalition pattern are strong indeed, for regardless of direction of change the coalition pattern has reconstituted itself in full. Likewise, in so far as the roles of members in comparable positions differ, it may be argued that structural forces are less important than other factors.

Use of role players. In the present experiment one set of six subjects is taken through the first sequence just mentioned (called the deprivation sequence), and another set of six is taken through the reverse sequence (called the gain sequence). These 12 cases are called the pre-test series. As a test for replication as well as for a test of conditions modifying the structure, a third set of 24 subjects is taken through the deprivation sequence. The role playing procedure in the deprivation sequence is as follows. The two players[4] meet with a naive subject to serve as a hypothetical military review court sitting on the case of Billy Budd.[5] The three read the case and give their preliminary vote and opinions in reply to a questionnaire. They are given fifty minutes to reach a group decision, and told that a unanimous decision, though preferable, is not obligatory. As the discussion gets under way the

[3] See especially Talcott Parsons and Edward A. Shils (editors) *Toward a General Theory of Action,* Cambridge, Mass: Harvard University Press, 1951, pp. 3–29 and pp. 53–109.

[4] I should like to express my special gratitude to the role players who gave a great deal of themselves in order to make their performance meaningful and consistent; to Warren Bennis and T. Harvie Hay of the Massachusetts Institute of Technology, John Hart, John Baer, Thomas King, Jr., Loren Wyss, Lawrence Mann and John Winston of Harvard University. For important and pioneer applications of role playing techniques see various works of J. L. Moreno; "An Experimental Study of Leadership and Group Life," by Ronald Lippitt and Ralph K. White in Theodore M. Newcomb and Eugene L. Hartley (editors), *Readings in Social Psychology,* New York, New York: Henry Holt and Company, 1947, pp. 315–329; "An Experiment in Role-taking," by James C. Brown, *The American Sociological Review,* 17 (October, 1952), pp. 587–597; and "Deviation, Rejection and Communication," by Stanley Schachter in *Theory and Experiment in Social Communication,* pp. 51–81, also published in *Group Dynamics, op. cit.,* pp. 223–248.

[5] Louis O. Coxe and Robert Chapman, *Billy Budd, A Play in Three Acts,* Princeton, New Jersey: Princeton University Press, 1951.

role players assess the position taken by the subject on the case, one player siding with him, the other taking the opposite position. The ally, called the "switcher," establishes a relationship of warmth with the subject as a person and one of agreement with him as a group member. This relationship is encouraged by the defensive arguments of the other player, called "the straight man." Almost without exception, the subject reciprocates both the warmth and the opposition. The resulting coalition pattern is permitted to develop naturally until the role players sense that the subject has assumed its permanent form. This first phase usually takes from ten to eighteen minutes. As the transition phase begins, the straight man strengthens his argument and the switcher gradually shifts his allegiance from the subject to the straight man—his skepticism melts into interest, then into agreement and finally into full support. When there is ample evidence that the subject recognizes the formation of this new coalition, the transition phase ends and the final phase begins. During this phase, which for measurement purposes is to be compared with the first phase, the role players maintain their alliance in a constant state, letting the subject initiate whatever strategy he choses. If he withdraws, they also withdraw; if he is aggressive, they respond with aggression. They reject all overtures for acceptance, unless the subject states that he has changed his opinion in agreement with them. In this case he is welcomed and the experiment is at an end. If, on the other hand, he is adamant, they maintain the pattern of relationships until time is up. The transition phase takes from five to ten minutes and the final phase around twenty minutes. Timing for the reverse, or the gain, sequence is about the same. Separate teams of role players are used for the pre-test and the experimental series; within a team, players alternate roles from session to session.

In the gain sequence, which is used partly as a control, it is expected that the member will accept the invitation to the coalition as a matter of course. However, in the deprivation sequence there come to play upon the subject two conflicting pressures. The first, stemming from the interdependence within the structure, presses the subject toward separation from the new coalition and defiance of their majority point of view. Though this pressure is backed by previous findings, it is, nonetheless, directly contrary to one of the basic working hypothesis of current social science; namely, that there is pressure upon a group member to conform to the standards and norms of his group. Asch has clearly demonstrated this pressure in the small group situation,[6] and Festinger, Schachter, and Back have illustrated some of its effects in larger settings, to mention only two of many recent studies that are relevant.[7] Since the central hypothesis of this research is that the coalition structure will reconstitute itself following the change of roles, it is expected that the subject will not alter his opinion to conform to the majority. By implication this assumes that the pressure toward isolation is stronger than the pressure to conform.

Subjects. A sample of 61 freshmen and sophomore male volunteers were given a series of screening tests and questionnaires. For the experimental groups, 24 were selected on the basis of status and personality needs. The 12 subjects in the pre-test series were not especially selected.

Measures. Whether the subject assumes the role of isolate or otherwise is determined by measuring three aspects of his role: changes in his *behavior* in the group, changes in his *opinion* on the issue under discussion and his *attitudes* toward himself and others after the discussion is completed. Before and after changes in *motivation* are also measured.

The *behavior* of subjects and role players is scored according to Bales' method of interaction process analysis which records the initiator, the recipient and the type of each act.[8] For our purposes Bales' 12 cate-

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[6] S. E. Asch, "Effects of Group Pressure upon the Modification and Distortion of Judgments," in H. Guetzkow (editor), *Groups, Leadership, and Men*, Pittsburgh, Pennsylvania: Carnegie Press, 1951, pp. 177–190.

[7] Leon Festinger, Stanley Schachter and Kurt Back, *Social Pressures in Informal Groups*, New York: Harper and Brothers, 1950.

[8] Robert F. Bales, *Interaction Process Analysis*, Cambridge, Mass.: Addison-Wesley Press, 1950. I am deeply indebted to Mary E. Roseborough, Rad-

gories are combined into three major ones: categories 1, 2 and 3 into *positive reactions;* categories 10, 11 and 12 into *negative reactions* and categories 4 through 9 into *instrumental activity.* All measures reported below are based upon the number of acts per 10 minutes. Change is determined by the differences between rates in the first and third phases of the sequences.

Attitudes toward the self and others are measured by two forms of sociometric questions. In the first, the subject is asked to choose between the other two members on the basis of friendship and on the basis of preferred membership in a group facing difficult situations. The second is Tagiuri's form.[9] Essentially it asks how one guesses other members will make their choices. Outgoing choices indicate attitudes toward others, while guesses are assumed to reflect attitudes toward the self.

Motivational changes are measured by scores on the Thematic Apperception Test, three pictures being administered before and three after the discussion.[10] The stories are scored for need achivement, using the scheme developed by McClelland and associates,[11] and on need dependency, using the scheme developed by Atkinson, Heyns, Veroff and Shipley.[12]

cliffe College, for scoring the interaction in the pre-test series. Interaction in the experimental series was scored by the author.

[9] R. Tagiuri, "Relational Analysis; an Extension of Sociometric Method with emphasis upon Social Perception," *Sociometry,* 15 (1952), pp. 91–104.

[10] I am indebted to Dr. Edgar L. Lowell, Department of Education, Harvard University, for the use of pictures which he has standardized for before and after comparisons, and for instruction in applying McClelland's Scoring Scheme.

[11] For details of the scoring procedure see David C. McClelland, *et al., The Achievement Motive,* New York, New York: Appleton-Century-Crofts, 1953. In a score re-score reliability test the product moment coefficient of correlation was .73 for 60 subjects and 180 stories.

[12] Though the term dependency is used here scoring operations are almost identical with theirs; for details of scoring procedures see T. E. Shipley and J. Veroff, "A Projective Measure of Need for Affiliation," *Journal of Experimental Psychology,* 43 (1952), pp. 349–356, and John W. Atkinson, Roger W. Heyns and Joseph Veroff, "Social Motives: 1. Effect of Experimental Arousal of the Affiliation Motive on Thematic Apperception." Accepted for publication by the *Journal of Abnormal and Social Psychology.* In a score re-score reliability test the product moment coefficient of correlation was .78 for 60 subjects and 180 stories.

Results

From the central hypothesis it is reasoned that if the subject deprived of the alliance does, in fact, assume the role of isolate, we should expect his behavior to be like that of the subject who is initially placed in the position of isolate by the role players. The test is made by comparing in detail the quality and frequency of subjects' behavior in the final phase of the deprivation sequence with subjects' behavior in the initial phase of the gain sequence. In addition, a test is made of the degree to which the member invited into the coalition assumes the appropriate role by comparing the final phase of the gain sequence with the initial phase of the deprivation sequence. For these two major comparisons, behavior is divided according to three qualities: positive, instrumental and negative; and according to three targets: each of the other members and the group as a whole (scored as such when the observer can not distinguish a more specific target). Results of the appropriate comparisons for the subjects, as well as of comparisons of the behavior of role players, are shown in Table 1.

Results support the hyothesis. Using a two-tailed t test, in 12 out of 14 comparisons, the probability of a t as large is at least .40. Regardless of the direction of change in the position of the coalition, behavioral roles of subjects when isolates correspond in detail, and their roles when parties to the coalition also correspond. Moreover, as shown in the lower section of the table, the appropriate roles of the players correspond (with five exceptions, four of which do not involve the subject, out of 28 instances). This means not only that the role players performed their function with precision, but that in both sequences the entire configuration of interaction, representing the coalition structure, is systematically reconstituted.

These results are taken as evidence that the structural fact of two members being in coalition against the third is more important in determining behavior in the group than temporal change itself or previous position within the group. It is evidence in support of the proposition that the coalition pattern is a fully interdependent structure of relationships.

Since, as mentioned above, the deprivation sequence is also used in the series of 24 cases testing the second problem of this research, behavior of the subjects in this series may be compared with that in the six cases just reported as a test for replication. Results of these comparisons are shown in Table 2. It is seen that no substantial differences exist when the subject is in the coalition and none at all exist when he is in the position of isolate. Thus, the tendency for the subject shifted out of the coalition to assume the behavioral role of the isolate is replicated.

Table 1. Comparison of Behavioral Roles in Two Different Sequences (Pre-Test) (Average Number of Acts per 10 Minutes)

Source and Direction of Activity	Type of Activity	Subject in Isolate Position			Subject within Coalition		
		Deprivation Sequence	Gain Sequence	Probability Level *	Deprivation Sequence	Gain Sequence	Probability Level *
From subject:							
To "switcher"	Positive	1.6	1.1	>.50	7.2	5.4	>.20
	Instrumental	3.3	5.7	>.40	3.8	3.6	>.50
	Negative	3.2	3.8	>.50	0.8	0.4	>.20
To "straight"	Positive	2.7	3.3	>.50	4.7	5.5	>.50
	Instrumental	8.9	6.5	>.40	22.1	26.9	>.50
	Negative	5.3	2.5	>.50	9.3	10.6	>.50
To all		27.8	26.7	>.40	18.4	15.6	>.50
From "switcher"							
To subject	Positive	1.4	3.7	<.20	15.5	12.4	>.20
	Instrumental	5.2	5.3	>.50	6.4	5.9	>.50
	Negative	4.6	4.4	>.50	0.8	0.2	<.10
To "straight"	Positive	17.2	21.6	>.50	1.8	0.4	<.01
	Instrumental	9.2	14.2	>.02	4.9	6.8	>.40
	Negative	0.3	0.6	>.40	5.6	6.0	>.50
To all		6.9	4.0	>.30	3.2	4.1	>.40
From "straight"							
To subject	Positive	3.5	1.7	>.30	4.2	2.8	>.40
	Instrumental	8.7	9.7	>.50	15.7	19.9	>.40
	Negative	5.3	5.0	>.50	10.1	9.6	>.50
To "switcher"	Positive	13.7	12.5	>.50	1.3	0.4	<.05
	Instrumental	20.5	19.8	>.50	9.0	2.5	<.02
	Negative	0.5	0.4	>.50	2.4	2.8	>.50
To all		8.0	7.9	>.50	13.7	10.5	<.20

* Using a two-tailed t test.

The second aspect of the subject's role is his opinion on the issue under discussion as it relates to opinions of the other members. Since there is no problem of change of opinion when the subject is shifted into the coalition, the discussion concerns only the deprivation sequence. According to the central hypothesis it is expected that the subject, as an isolate, will maintain his opinion in defiance of the majority. An analysis of the change of opinion of subjects toward the majority opinion shows that the predictions are not upheld. Of the 30 subjects in the deprivation sequence, only 16 maintain their original opinion, while 14 do not. Thus, as far as opinion on the case is concerned there is no strong tendency toward isolation.

The third aspect of the subject's role under consideration is his personal attitudes, both toward himself and toward each of the other members. It is expected that, having been deprived of support, the subject will guess that others in the group will reject him in their sociometric choices, reflecting a depreciatory attitude toward himself. Results are strongly negative. Of the 24 subjects all but two guessed they would be chosen as friend by the switcher and 10 felt that they, rather than the straight man, would be chosen as a future team member. In respect to the subject's attitudes toward others the hypothesis pre-

dicts that he will tend to reject both, particularly the switcher who had deserted him. Contrary to these expectations, 16 chose the switcher as friend and seven chose him as the preferred team member.

In short, the subject's guessed and own choices reflect, not isolation, but the original pattern of relationship, as though no change at all had taken place. He selects his former ally and perceives himself as chosen by him.

The fourth aspect of role analyzed, though it is not immediately relevant to the hypothesis, is the change in motivation. Comparison of the before and after scores on need achievement shows a significant increase. The need achievement for the 24 experimental cases increases from 2.58 to 5.08, the increase being significant at .01 level, using a one-tailed *t* test. Need dependency also increases; from an average of 3.1 before to 4.8 after the session, the difference being significant at around the .06 level. Thus, the change in role structure of the group results in an increase in the subject's need for personal achievement and an increase in the need for acceptance by others.[13]

TABLE 2. TEST OF REPLICATION FOR DEPRIVATION SEQUENCE: COMPARISON OF BEHAVIORAL ROLES BETWEEN PRE-TEST AND EXPERIMENTAL SERIES. (AVERAGE NUMBER OF ACTS PER 10 MINUTES)

Source and Direction of Activity		First Phase; Before Switch			Third Phase; After Switch		
		Pre-Test N=6	Experimental N=24	Probability Level *	Pre-Test N=6	Experimental N=24	Probability Level *
From subject:							
To "switcher"	Positive	7.2	9.8	>.50	1.6	3.4	>.30
	Instrumental	5.1	3.9	>.50	6.0	8.2	>.50
	Negative	0.8	1.4	>.50	3.2	5.4	>.40
To "straight"	Positive	4.7	2.9	>.30	2.7	3.4	>.50
	Instrumental	29.7	26.2	>.50	16.4	16.3	>.50
	Negative	9.3	10.6	>.50	5.3	8.4	>.50
To all		9.5	9.5	....**	17.7	17.6	....**
From "switcher"							
To subject	Positive	15.5	12.9	>.50	1.4	1.5	>.50
	Instrumental	6.4	13.6	>.20	5.2	13.6	>.20
	Negative	0.8	0.4	>.30	4.6	7.7	>.40
To "straight"	Positive	1.8	1.3	>.40	17.2	17.4	>.50
	Instrumental	4.9	9.5	>.30	9.2	16.2	>.30
	Negative	5.6	9.0	>.30	0.3	0.3	>.50
To all		3.2	6.9	>.30	6.9	6.6	>.50
From "straight"							
To subject	Positive	2.8	1.4	<.05	3.5	2.1	>.40
	Instrumental	19.9	13.4	>.50	8.7	14.0	>.40
	Negative	9.6	8.2	>.50	5.3	9.4	>.30
To "switcher"	Positive	0.4	0.6	>.10	13.7	15.5	>.50
	Instrumental	2.5	6.2	>.40	20.5	18.2	>.50
	Negative	2.8	5.2	>.30	0.5	0.3	>.40
To all		10.5	21.7	>.40	8.0	7.2	>.20

* Using a two-tailed *t* test.

** Because in acts scored *to all* there was found a systematic difference between scorers for the pre-test and the experimental series, surplus scores in this category in the pre-test session were prorated over instrumental categories. This was done only for the subject; all other rates are as originally scored.

[13] An unexpected finding, but one that proved important in the investigation of the problem in the second section of the paper, is the fact that the increase in dependence and achievement does not occur to the same degree in all sub-categories of the scoring schemes. In fact, the increase is almost solely within the positive categories (anticipation of acceptance or success, expression of gratification over receipt of rewards or successful accomplishment, etc.) and not within the negative categories (anticipation of rejection or failure, apperception of blocks and difficulties, etc.). Implications of these results for measuring motivation are suggested below.

Conclusion

In respect to our central question, these results are taken to mean that: (1) interdependence within the coalition pattern determines in detail the subject's change in behavior, (2) it does not alone determine his change in opinion, and (3) it is either of no influence or is completely counteracted by opposing factors in respect to his attitude toward himself and his feelings toward other members. The specific conclusion for our present discussion is that the coalition pattern is a fully interdependent structure only in respect to behavior. General implications for the fact that behavior, opinion and personal attachments change independently are suggested in the final section of the paper.

SOCIAL AND PERSONALITY FACTORS AFFECTING THE INTERDEPENDENCE OF THE STRUCTURE

In testing the strength of the role structure attention has been given to central tendencies in the reactions of subjects. However, it is clear that the structural tendencies that exist will impinge upon different types of individuals in different ways. The second problem reported in this paper is a test of the effects of the subject's status position and certain of his personality characteristics in pressing him toward the role of isolate, thereby maintaining the structure, or in pressing him toward submission and acquiescence, thereby dissolving the structure.[14]

There are three hypotheses under consideration; the first two were set up before the experiment, while the third, as explained later, was set up as a result of motivational tendencies reported above.

Hypotheses

The *first* hypothesis is that the coalition will be more apt to persist when the isolate is of higher status relative to others in the group than when he is of lower status. The *second* hypothesis is that the coalition will be more apt to persist when the isolate has a low need for the acceptance of others than when he has a strong need for their acceptance. The third hypothesis is that the coalition will be more apt to persist when the isolate has a strong need for self-enhancement than when he has a minimum need for self-enhancement.

In the status hypothesis it is assumed that, other things being equal, the controlling resources of the high status member are less contingent upon actual support from others, and, consequently, that both the value and the loss of the ally is less for him than for the low status member. With superior resources following rejection, he is expected to stand against the coalition, while the isolate with fewer resources is expected to submit.[15] In the dependence hypothesis it is assumed that the highly dependent person has a greater emotional investment in the original alliance, suffers greater deprivation as a result of the change and is forced into submission as the only means of acquiring the social acceptance that is so important to him. Similar pressures are assumed to operate upon the person with a strong need for self-enhancement.

With interaction between the social and the personality variables, it is expected that the coalition pattern will persist most frequently when the isolate is of a high status with a low need dependence (and with a minimum need for self-enhancement) and that it will dissolve most frequently when the isolate is of low status with a strong need dependence (and with a strong need for self-enhancement).

Measures

Status criteria felt to be important in the prestige hierarchy of the university society were used to classify subjects. They

[14] For a brief discussion of factors effecting pressures toward conformity see *Group Dynamics, op. cit.*, pp. 137–150, and Leon Festinger, "Informal Social Communication" in Leon Festinger, *et al.*, *Theory and Experiment in Social Communication*, Ann Arbor, Michigan: Research Center for Group Dynamics, University of Michigan, 1950, pp. 3–17.

[15] For some related hypotheses see: Robert F. Bales, *Interaction Process Analysis, op. cit.*, pp. 153–155; and George C. Homans, *The Human Group*, New York, New York: Harcourt, Brace and Company, 1950, pp. 144–145; for findings, Harold H. Kelley, "Communication in Experimentally Created Hierarchies," in *Group Dynamics, op. cit.*, pp. 445–461; and H. W. Riecken and J. W. Thibaut, "Authoritarianism, Status and Communication of Aggression," to be published in *Human Relations*.

are: (1) secondary schooling, (2) father's education, and (3) father's occupation. Those who went to private preparatory school, whose father was trained at college or university, and whose father is either in one of the major professions or is a large industrial or business entrepreneur (or related occupation) were classified as high status; those who went to public school, whose father did not go to college and whose father is not within the occupations above, were classified as low status. Twelve were selected as unambiguously high and twelve, low. As a control, role players are also classified on status, one team high and one team low, so that each team interacts with sets of high and sets of low status subjects. Status classification were made explicit before the experiment got under way.

The three members met with the experimenter, ostensibly to check the accuracy of material on their personal data sheets. Points of importance to status classification were raised openly so that the role players might discuss them naturally in a brief get-acquainted session immediately before the experiment.

As mentioned above, to classify subjects on personality needs, 61 students were given three pictures from the Thematic Apperception Test. Their stories were scored for need achievement and need dependency. Originally it was planned to test the effect of both needs, but unfortunately there occurred too few cases where the subject had both high status and high need achievement. As an alternative, 24 subjects were standardized on low need achievement and need dependence was used as the independent personality variable, twelve subjects being above and twelve below the median for this measure.

A third measure of personality need—called need for self-enhancement—was developed in the course of the research. Assumed to be more general than either achievement or dependence, its measurement is based upon the observed before and after motivational changes mentioned above.[16] It will be recalled that wish-fulfilling, positive imagery (anticipating acceptance or success, signs of satisfaction over receiving help or achieving a goal, etc.) increased significantly while negative, deprivation imagery (anticipating rejection or failure, apperception of blocks and difficulties, etc.) did not increase. Moreover, tests of the larger sample of 61 cases showed that positive dependence scores were highly correlated with positive achievement scores. These facts led to two inferences: first, that positive imagery more accurately represents a personality need than negative imagery, and, second, that there exists a motivational tendency, more pervasive than the discrete needs of dependence and achievement, that both affects and is affected by social change. This motivational tendency is manifest, at least, by a wish for social approval and by successful competition against others. Here it is called need for self-enhancement.

Specifically, the need is measured as follows: The sum of scores in the negative subcategories in the McClelland scheme for analyzing achievement are added to the sum of corresponding negative scores in the Atkinson, Heynes, and Veroff scheme for analyzing dependence (affiliation), and this total is subtracted from the total positive scores in measures of both needs. In this index, therefore, wish-fulfilling imagery is modified by images of blocks, failures, rejections, and the like.

The hypotheses are tested for the 24 cases in the deprivation sequence by two-way analysis of variance. For behavior, tests are made of phase changes in two types: instrumental activity and the ratio of positive to negative reactions. Submission and dissolution of the coalition is represented by a comparative decrease in instrumental activity and a comparative increase in the ratio of positive to negative reactions. For opinion, tests are made of the change in the subject's opinion from before to after the session, acquiescence being indicated by a shift toward the opinion held by the majority during the final phase.

Results

First hypothesis. In respect to instrumental behavior, contrary to predictions, it is found that high status is not associated with resistance to the coalition. In respect to positive and negative reactions, contrary to expectations, it is found that the low status isolate offers more resistance to the

[16] See footnote number 13 above.

coalition than the high status member, though the difference is not statistically significant. Congruent with this it is found that the low status person is less apt to conform to the majority opinion than the high status isolate, though again not to a significant degree. Tentatively, these results suggest a reversal of the status hypothesis. Certainly, the null hypothesis that status of the isolate has no effect upon the maintenance or dissolution of the structure may not be rejected.

TABLE 3. AVERAGE CHANGE IN POSITIVE/NEGATIVE BEHAVIOR FROM FIRST TO THIRD PHASE

Status of Subject	Need for Self-Enhancement: High	Low	Average
High	−3.31	+2.61	− .35
Low	−1.25	−2.05	−1.65
Average	−2.28	− .28	−1.00

Results of Analysis of Variance:

Source	df	Mean Square *	F Ratio
Subject's status	1	10.06	....
Apperception	1	39.42	3.39
Interaction	1	67.98	5.83**
Cases treated alike	20	11.61	

* For the analysis of variance, a constant of 11.00 is added to original measures.
** Significant at the .05 level.

Second hypothesis. For need dependence it is found again that the predictions do not hold. Between the strongly dependent and the less dependent isolate there are no significant differences either in changes of instrumental activity or in changes of positive and negative reactions. Moreover, in testing for interaction between this and the status variable there is some evidence of a reversal of the hypothesis. It is found that maximum active resistance to the coalition is offered by the dependent person with low status, rather than the less dependent person with high status. This tendency holds for change in opinion as well as for change in behavior. Since these differences are not in themselves statistically significant the null hypothesis may not be rejected, but the results, though weak, are a second indication that the assumptions underlying the first and second hypotheses are in error.

Third hypothesis. A test of the interaction effect of status and self-enhancement upon positive and negative reactions renders significant differences, though, as shown in Table 3, they are still not in the predicted direction. Briefly the results are that, first, self-enhancement is more important for the high status members than for the low; second, the high status member with a strong need is most apt to resist actively the coalition while his counterpart with low need is apt to show positive acceptance of the other members. This tendency for high status and low need for self-enhancement to be associated with submission is found again, though not so strongly, in the test for changes in opinion, shown in Table 4. These results indicate that the null hypothesis that status and need for self-enhancement have no effect upon maintenance or dissolution of the structure may not be rejected. In the main, however, status and need for self-enhancement interact directly contrary to our prediction.

TABLE 4. AVERAGE CHANGE IN SUBJECT'S OPINION TOWARD MAJORITY OPINION

Status of Subject	Need for Self-Enhancement: High	Low	Average
High	2.0	18.0	10.2
Low	1.0	5.0	2.8
Average	1.0	12.0	6.5

Results of analysis of variance: no F-ratio approaches the .05 level of significance.

In summary, the results do not support the hypotheses. By itself, status is not strong enough to produce regular differences, and apparently the measurement of the need for dependence was not refined enough to provide a sound separation of the subjects according to personality needs. With refinement, in the form of the need for self-enhancement, the effects of both the status variable and personality needs become considerably clearer. If these effects are substantiated by additional tests they permit an improved specification of the conditions under which the coalition pattern is most and least apt to persist as a power structure. Our results may be summarized by stating two revised propositions which assume that a number of other variables, such as issue

being discussed, ego involvement, and others, are held constant:

(1) Members of the coalition being willing, the structure is most apt to dissolve when the isolate is of a relatively high social status and has a relatively low need for self-enhancement.

(2) The structure is most apt to persist, even becoming increasingly rigid, when the isolate has relatively high social status and a strong need for self-enhancement.

DISCUSSION

Space limitations allow only brief comment on the measures used and upon two implications of the findings, one specific to conditions affecting the coalition pattern, the other of more general relevance to the study of small group structures.

Modifying conditions

The hypotheses stating conditions under which the coalition is most and least persistent are not confirmed by the results. The only clear case of significant differences occurs when status and need for self-enhancement are used as the independent variables, and here the direction of differences is a reversal of the predictions. Are we to account for these inconclusive or negative results in terms of the inadequacy of the measures or in terms of error in the assumptions that underly the hypotheses?

Two facts taken together, first, that only positive imagery increased following deprivation and, second, that subjects classed high and low on the original measure show no significant difference in reactions, indicate that the measure of need dependence is inadequate. There is evidence on the other hand, that measurement of the need for self-enhancement is useful, at least as a first approximation. For, aside from the data presented above, an independent test was made of this variable upon reactions of subjects *during the first phase,* at which time he was being invited to join the coalition against the other role player. As would be reasonably expected, it is found that the person with the stronger need capitalizes more fully upon the invitation to a stronger power position than the person with a lesser need. The results of a two-way analysis of variance of the frequency of positive acts, agreements, and signs of satisfaction and solidarity directed toward the ally are shown in Table 5. With this indication of the validity of the measure, the findings force us to question assumptions underlying the hypotheses.

TABLE 5. AVERAGE RATE OF POSITIVE RESPONSE TO ALLY, DURING FIRST PHASE

	Need for Self-Enhancement		
Status of Subject	High	Low	Average
High	9.0	7.0	7.9
Low	15.2	8.1	11.6
Average	12.1	7.5	9.8

Results of Analysis of Variance:

Source	df	Mean Square	F Ratio
Subject's status	1	80.0	3.279
Need	1	124.0	5.082*
Interaction	1	38.0	.....
Cases treated alike	20	24.4	

* Significant at the .05 level.

Basic to the three hypotheses is the assumption that the greater the personal and social loss resulting from the "switch," the greater the tendency to change opinions and feelings to conform with the group. Results show that this assumption is in fundamental error. The person with greatest loss—the insecure, anxious person—defends himself rather than capitulating, and in so doing sets himself off from the group, while the less threatened person apparently accepts the reality of the change, adjusting to it by altering his opinion and feelings to fit in with the rest of the group members. As a tentative hypothesis it is suggested that one important personality condition affecting the persistence of the coalition structure is the level of anxiety that isolation generates: the higher it is the more persistent the structure, the lower, the more likely is the coalition structure to dissolve.

Role structure

In introducing the problem of interdependence of relationships within the coalition pattern, it is argued that if part of the pattern is artificially changed and if, in reaction to the change, the rest of the pattern is

constituted, then the relationships are interdependent. Arguing from another point of view, we might assess the strength of the pattern by asking what elements in the original pattern seem more impervious to the induced change, for certainly resistance to externally induced change is strong evidence that relationships are structured. In the present experiment, the answer to this question is that emotional attachments change little at all, while behavior shifts radically. Thus, an apparent paradox is produced by the experimental procedures; we argue that there is a structure if, following treatment, behavior of the subject changes so as to fall in line with the new pattern; yet we say that the strongest elements in the initial pattern are emotional attachments because they resist change.

One solution to the paradox lies in the independence between patterns of behavior and patterns of attachments. The emotional ties *are* stronger and more persistent than the behavioral patterns, but the significant point is that before the change their positive and negative aspects coincide with the behavioral patterns. After the change, they do not. Evidently behavior and attachments, coinciding in the original phase, have (through differing resistance to induced change) become separated, one from the other, then combined in the final phase where they do *not* coincide. The new pattern of behavior is superimposed upon the old pattern of attachments.

These considerations lead to the conclusion that the coalition pattern is a partially interdependent structure, composed of emotional attachments between members, shared (or unshared) opinions and behavioral patterns which are laterally differentiated in their susceptibility to induced change. The lag in adjusting attachments is greater than the lag in opinions and these are greater than the lag in adjusting behavior. A general hypothesis is that this differential lag in adjustments exists in any group. Formally, this might be stated as follows:

In a role structure of some stability, the structure of personal, emotional attachments (positive or negative) is stronger than the structure of common values and beliefs that are relevant to the purpose of the group, and these structures are stronger than the pattern of manifest interaction between members. Further, when the structure is by some means changed, readjustments are made with differential facility in three aspects of a role, such that there is a greater lag in adjusting personal emotional attachments, than in adjusting values and beliefs, and greater lag in adjusting values and beliefs than in adjusting manifest behavior toward others within the structure.

AN EXPERIMENT ON CONFORMITY TO GROUP NORMS WHERE CONFORMITY IS DETRIMENTAL TO GROUP ACHIEVEMENT

HAROLD H. KELLEY AND MARTIN M. SHAPIRO *
Yale University

IN much of the past research on individual behavior related to group norms, there has been an implicit (and often explicit) emphasis upon *conformity*. For example, there has been considerable interest in such questions as: What are the personal and social factors associated with individuals' conformity? [1] What is the nature of the

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[1] M. Dalton, "The Industrial 'Rate-Buster:' A Characterization," *Applied Anthropology*, 7 (Winter, 1948), pp. 5–18; L. Festinger, S. Schachter, and K. Back, *Social Pressures in Informal Groups*, New York: Harper and Bros., 1950; T. M. Newcomb, *Personality and Social Change*, New York: Dryden Press, 1943.

influence process by which non-conformists are brought into line? [2] With respect to what kinds of issues do conformity pressures develop? [3] Although the results of investigations on these topics have been extremely valuable, because of the implicit concern with conformity, our knowledge of the processes underlying *non-conformity* is probably rather one-sided. For example, instead of the above questions one may wish to ask: How can a non-conformist avoid social pressures? In what realms can group members differ without fear of sanctions? What are the social and personal characteristics that render a person prone to non-conformity? On the basis of present research, the answer to the last question proves to be mainly in terms of characteristics the non-conformist does *not* possess. He tends to be *un*popular, to find *few* attractions in the group, to have *little* status and prestige, and to have *few* links with the communication network of the group. Perhaps the most positive thing we learn about the non-conformist is that he is likely to have competing loyalties and outside affiliations.

The present authors suspect that this particular, somewhat negative picture of the non-conformist emerges because most of this type of research has been highly selective in the kinds of situations studied. It has dealt primarily with settings where, in some sense, conformity is "good" for the group—it promotes solidarity, facilitates group achievement, or provides an anchorage for members' opinions. Given these conditions, it is hardly surprising that the non-conformist emerges with a rather "bad" reputation.

The purpose of the present study is to investigate conformity in a situation where it is detrimental to the success of the group. The hypothesis to be considered is that under these circumstances, members who feel themselves to be highly accepted by their colleagues will exhibit less conformity than members who feel little accepted. The general assumption behind this hypothesis is that a person who feels his membership in the group is highly valued by his associates, considers himself free to deviate from social norms without the usual sanctions for non-conformity being invoked. This freedom may not be exercised in the many situations where the highly valued member is satisfied with the opinions and behaviors supported by current mores. However, when he sees the limitations of prevailing norms and the advantages of social change, we may expect him to utilize his freedom to deviate. Under these latter conditions he will exhibit less conformity than members who feel less secure about how they are evaluated.

In the procedure to be described, an attempt is made experimentally to induce differences among group members in their feelings of being accepted by their fellows. Some are made to feel that they are completely accepted, and others that their acceptability is in doubt. Subsequently, the group undertakes a difficult judgmental task on which each member helps achieve group success by determining the correct answer. An apparent norm or consensus about the correct answer rapidly develops and pressure is exerted on each member to conform to this consensus. However, as the task proceeds, the evidence provided by the stimuli being judged increasingly contradicts the consensus. The crucial aspect of the procedure, then, is to confront each S with a situation where his judgments affect his group's achievement, but where this judgmental behavior is under cross-pressures—conformity pressures favor making one judgment but cues from the physical world favor another. The assumption behind this procedure is that it provides a setting in which the factors underlying freedom to deviate and their effects can be observed most clearly.

PROCEDURE

Subjects. The subjects were 82 young men, all volunteers from the Yale freshman class. Five or six men were assembled for each two-hour experimental session. In order to reduce the effects of previous interpersonal attitudes, the subjects at each session were selected so as to have little or no prior acquaintance with one another.

[2] L. Festinger and J. Thibaut, "Interpersonal Communication in Small Groups," *The Journal of Abnormal and Social Psychology,* 46 (January, 1951), pp. 92–99; S. Schachter, "Deviation, Rejection, and Communication," *The Journal of Abnormal and Social Psychology,* 46 (April, 1951), pp. 190–207.

[3] S. Schachter, *op. cit.*

Preliminary Instructions. The experiment was described as having the purpose of studying small groups working on various kinds of tasks and problems. They were led to believe that the 5 or 6 men present were to be divided into two groups of two or three members each. These two groups were to be among a dozen or so similar groups competing, in terms of overall performance, for a fifteen dollar prize. The Ss were told that in order to observe the performance of men who get along well together, the small groups were to be formed very carefully, taking especial account of their personal preferences as to co-workers.

To provide the Ss with some basis for judging one another, each subject was asked in turn to introduce himself and tell something of his interests and experiences, and his usual roles in small groups. A further purpose of this procedure, not mentioned to the subjects, was to give each person the feeling that he had revealed enough information about himself to require that he take seriously the other Ss' evaluations of him. Each S was then asked to indicate his frank opinions about the acceptability as a co-worker of each of the other Ss, these judgments being privately indicated on simple rating scales. The acceptability ratings were collected and the experimenters withdrew temporarily, supposedly to determine an arrangement of the two small groups that would permit as many Ss as possible to work with persons they considered highly acceptable. In actuality, this time was used to allocate each subject to one of the two experimental treatments and to prepare standardized materials for use in the next phase of the procedure.

The subjects were then placed in positions separated by partitions, so that they could not see one another. They were asked to discontinue further intercommunication except as given explicit permission to do so. At the same time they were reminded that even though physically separated, the members of each group to be formed would be working for a single score for their group, this score to be based on the cumulation of their individual performances.

Next, each subject was given a notice assigning him to a group which in all cases was composed of himself and his two highest choices. It was possible to establish these groupings because the Ss had no genuine communication with one another and, therefore, were unaware of the inconsistencies in the group assignments. Actually, for the remainder of the experiment, each S worked completely independently of the others.

Introduction of Experimental Variable. Attached to the assignment notice given each S were the ratings he, himself, had just made and two fictitious sets of ratings, apparently made by the two men he was assigned to work with. As the subject read these ratings, in some cases, *the high acceptance variation,* he learned that his future co-workers judged him to be highly acceptable as a co-worker. In other cases, *the low acceptance variation,* he learned that his future co-workers were quite uncertain about his acceptablity. Although they did not rate him clearly at the "unacceptable" end of the scale, they placed him below the "slightly acceptable" point, and specifically at the "uncertain" position. In all cases, S's co-workers actually rated each other quite highly.

The delivery of the fictitious ratings was made to appear as an error in experimental procedure. After a period of pretended "confusion," giving the Ss an opportunity to read the ratings, the experimenter collected them, feigning embarrassment and privately apologizing to each S for the "mistake." Immediately thereafter, Ss were asked whether they wanted to continue with the group to which they had just been assigned or to be assigned to another one. These "reassignment" ratings were examined and the decision to continue with the existing groups was announced. The Ss then proceeded to the first of several experimental tasks.

At this point in the experiment, assuming the experimental manipulations to have been successful, each S believed he was working in a small group with two other persons who had been his first two choices as co-workers from among the other 4 or 5 men present at the session. In some instances he believed that these men reciprocated his feelings—that they desired to work with him as much as he with them. In other instances, he believed they had misgivings about his acceptability as a co-worker. It is probably worth noting at this point that virtually all

of the Ss found the proceedings to be quite convincing. Incidental evidence, to be mentioned later, indicates that none of them clearly recognized that the crucial ratings were fictitious or that their subsequent work was carried on independently.

Assignment of Subjects to Experimental Conditions. At the time indicated above, the Ss were arbitrarily assigned to one of the two experimental treatments. The majority were allocated to the low acceptance variation because it was anticipated that reactions to this treatment would be more variable than to the high. The only control introduced into this assignment was to insure that the Ss allocated to the *high* and *low* treatments would be comparable in their actual acceptability ratings. The actual acceptability of each S was determined by computing the proportion of the other Ss who listed him as one of their first two choices as a co-worker.

Experimental Task. The Ss were given a series of six tasks. For all tasks, each S thought that his efforts and those of his two alleged companions were being pooled to form a total score for their work group. The tasks were selected with the intention of determining the effects of feelings of acceptance upon such things as immediate memory for complex stimuli, resistance to fatigue and distraction, ability to shift one's set while solving problems, and reactions to frustration. The present report presents only data obtained from a judgmental problem in which each S was confronted by a consensus of opinion between his two co-workers that became increasingly incongruous with the evidence from the task itself.

The task consisted of a series of ten problems, each consisting of the presentation of a pair of squares labeled "A" and "B." Each square contained approximately 100 dots and the problem was to judge which square contained the larger number, there being too many dots to count in the allotted time. The Ss were informed that the correct answer was the *same* throughout the series of ten separate presentations, either A or B being the right answer for all problems. They were also told that the score for their group would be the total number of times that members of their group gave the correct answer.

On initial problems in the series, it was not apparent which square had more dots. (In actuality, the numbers were identical for the first two problems.) As the series continued, one square consistently gained a few dots on each presentation while the other square consistently lost a few. In this manner, it became increasingly clear that square B had more dots. (The ease of the judgmental task on the final problems is indicated by data from twenty-six observers, not used in the experiment, who judged each of the pairs without knowledge that the correct answer was the same in all cases. On the last four problems in the series, they made a total of only four incorrect judgments.)

After their judgments on each problem had been collected, the Ss were told that they could communicate within their "groups" by means of written messages with no restrictions being placed upon the content of this communication. The messages were apparently delivered by the experimenters, but actually they were intercepted and preserved for content analysis, and fictitious messages were delivered instead. The content and delivery of the fictitious messages were the same for all Ss and followed this schedule:

After problem 1, S received two messages:
From co-worker X: "Finally they let us get together. I think the answer to this one is *A*."
From co-worker Y: "What do you think it is? I've got a hunch it's A."

After problem 2, S received one message:
From co-worker X: "I definitely think it's A."

After problem 3, S received two messages:
From co-worker X: "Everybody put down A!"
From co-worker Y: "It's A all right. Let's all answer A."

As a result of these experimental procedures, each S was confronted with the following situation: To help his group make a good score it was necessary for him to determine the correct answer for the series of problems. Initially he found it very difficult to determine this answer. At that time, however, he learned that his colleagues agreed that A was the correct answer. They soon

expressed considerable confidence in this opinion and exerted pressure on him to give A as his answer. At this point, on the fourth problem, 65 per cent of the Ss conformed to this opinion, answering A. (In contrast, only 35 per cent of a sample of non-experimental observers answered A on this problem.) Then, as the series of problems proceeded, the evidence became increasingly clear that the consensus was incorrect and the correct answer was B.

Measure of Conformity. On each problem, S indicated the square he believed to be correct and also reported his confidence in each judgment by using a five point scale on which "1" means "just guessing" and "5" means "completely confident." A rough index of each S's conformity was computed by adding his confidence ratings, giving positive values when the accompanying judgment was A and negative values when B. This index was then corrected to take account of whether, on the first problem, the person independently judged A or B to be the correct answer.[4] On this basis, each person was placed on a scale of conformity where high positive values indicate high conformity, and high negative values indicate low conformity. Because the judgments for the first problem were made completely without knowledge of co-workers' opinions, this index was based only on responses to problems 2 through 10. Combining this series of responses gives a measure which reflects both the extent to which S accepted the group consensus on early problems and the extent to which he conformed to the consensus in the face of contradictory evidence presented by each succeeding pair of squares.

Other Measures. At the end of the experiment, the Ss were given rating scales on which to indicate (a) their desire to continue working with their present group, (b) the extent to which they had become angry or annoyed with their co-workers, (c) how much they liked participating in the experiment, (d) their present feelings about the acceptability of the other subjects as co-workers, and (e) how they thought their co-workers evaluated them.

An index of how attractive each S found his group to be (*valuation of membership*) was constructed by combining his initial ratings on desire to remain in the group (made immediately after reading the fictitious ratings), the same rating made at the end of the experiment, and his final ratings of the acceptability of his two co-workers.

Approximately six weeks after the experiment, a follow-up questionnaire, with five-point rating scales, was given concerning Ss' general expectations and desires with respect to being accepted by other members of groups to which they do or might belong. Some of the items in this questionnaire had to do with acceptance on the basis of making contributions to the group and working for its success: "Do you expect to be a member whose efforts for the group are appreciated and valued by other members?" "Are you considered by other members as playing an important part in the group?" Other items had to do with acceptance on the basis of attractiveness of personality and desirability as a person with whom to interact: "Do you expect to be one of the most popular members?" "Are you considered by other members as having a likeable personality?"

Termination of the Experiment. Considerable time was taken at the end of the experiment to explain its purpose and reveal the details of the procedure to the subjects. They were carefully told about the fictitious acceptability ratings and were reassured that

[4] A person's initial judgment made a consistent difference in how he responded to all subsequent problems. For example, on the fourth problem, after the Ss had received all the messages indicating the apparent consensus of opinion that A was the correct answer, A was given by 79 per cent of those whose initial judgments had been A, but by only 54 per cent of those whose initial judgments had been B (significantly different at the 3 per cent level of confidence). This result suggests that there may have been some tendency in this situation for Ss to become committed to their initial judgments.

To take account of initial judgments, the conformity indices were corrected as follows: One average conformity score was determined for all Ss initially giving A and another average for all initially giving B. In this computation, equal weight was given to each experimental treatment, thus preventing the treatments from contributing differentially to the two averages according to chance differences between the treatments in their initial frequencies of A and B. The difference between these two averages was then added to the scores of all Ss who initially answered B, this serving to make their scores comparable to those obtained by Ss who initially answered A.

their genuine evaluations of one another had been quite favorable. At virtually all experimental sessions these revelations evoked general laughter and expressions of relief. From the comments and behavior at this time, it appeared to the investigators that the experimental treatments had been quite effective with most Ss. None of them reported having a firm hypothesis that they were in reality working alone or that the ratings were fictitious. Five Ss reported failure to read the ratings and were eliminated from the analysis of the results. One person became aware that we were intercepting the messages during the number judgment task and another did not understand that the correct answer was the same for all problems. Eliminating these cases, our analysis is based upon the remaining 75 of the original 82 subjects, 29 in the *high acceptance* treatment and 46 in the *low acceptance* treatment.

After all their questions had been answered, the subjects were asked for their opinions about the disposition of the prize money and were requested to maintain s crecy during the remainder of the period during which the experiment was scheduled. Their excellent cooperation in the latter respect provides an indication of their favorable attitudes toward the experiment at its conclusion.

RESULTS

Effect of Acceptance Upon Valuation of Membership. Before considering the evidence directly pertaining to our hypothesis, it is necessary to note the powerful effect the experimental treatments had upon the degree to which Ss desired to maintain membership in their groups (valuation of membership). Immediately after receiving the information about their acceptance, the Ss indicated whether they wanted to continue with the group to which they were assigned or to be assigned to another. Ninety-three per cent of the *high acceptance* Ss indicated a strong preference to remain in the assigned groups whereas only 34 per cent of the *low acceptance* Ss exhibited a similar degree of preference for the existing groupings. This difference is significant beyond the .001 level.

During the course of the experiment, both *highs* and *lows* tended to lose their desire to remain in the original groups. However, the evaluation of membership exhibited by the *lows* declined somewhat more than that shown by the *highs*. This is most apparent in comparisons of pre- and post-experimental ratings of the acceptability of their co-workers. In evaluations of the person who initially was their first choice as a co-worker, 53 per cent of the *lows* and 17 per cent of the *highs* gave lower ratings after the experiment than before (p less than .002). For ratings of the original second choice, the corresponding figures are 38 per cent and 13 per cent (p=.02). As a result of these shifts, at the end of the experiment 32 per cent of the *lows* rank one or both of their original first two choices below one of the other persons present at the session. For none of the *highs* is this true.[5]

In general, valuation of membership is lower for Ss experiencing low acceptance than for those experiencing high. Whereas the *highs* uniformly exhibit high valuation of membership, the *lows* have lower valuation on the average and also much greater variability in how attractive they find their work groups.

Effects Upon Conformity of Experimental Variations in Acceptance. It has generally been observed that the degree to which members value a group tends to be positively correlated with their acceptance of influence from other members and their conformity to group norms.[6] If this be true, insofar as our high acceptance Ss place more value upon their membership, we would expect them to conform more closely to the opinion consensus than the *lows* do. On the other hand, our main hypothesis in this study is

[5] Possibly related to these results is the fact that at the end of the experiment the *lows* more often report having been annoyed or angry with other members of their group. Forty-seven per cent of the *lows* report this while only 20 per cent of the *highs* do so (p less than .02). As might be expected, it was also found that fewer *lows* than *highs* enjoyed participating in the experiment. On the questionnaire given before the true purpose of the experiment had been explained and its details revealed, 63 per cent of the *highs* reported having liked the experiment very much, but only 36 per cent of the *lows* reported this (p=.02).

[6] K. W. Back, "Influence Through Social Communication," *The Journal of Abnormal and Social Psychology*, 46 (January, 1951), pp. 9–23; L. Festinger, S. Schachter, and K. Back, *op. cit.*

that the opposite will hold true—that *highs* will conform *less* than *lows*.

A comparison of all *highs* with all *lows* tends to support the former hypothesis: the *highs* show more conformity than the *lows*, but the difference does not approach statistical significance.

Because the factor of valuation operates against the hypothesized inverse relation between acceptance and conformity, a more sensitive test of this hypothesis necessitates controlling for the effects of valuation. A statistical control, in which valuation is held constant, was attempted by using the index of valuation described above. A comparison of *highs* and *lows* with respect to conformity was made for each value of the index for which there were both *high* and *low* Ss. There was no apparent consistent difference between *highs* and *lows* in these comparisons. Therefore, our hypothesis is not supported by the experimental variations in acceptance. Unfortunately, the number of cases available for each comparison is considerably reduced by this procedure, so the hypothesis is not tested with any great precision in the present data.

Relation between Valuation of Membership and Conformity. The low acceptance sample, which yields a relatively wide range of valuation scores, provides an opportunity to study the correlation between valuation and conformity. The observed relationship substantiates previous observations: within the *low acceptance* sample, the product moment correlation between scores on valuation of membership and amount of conformity is .43 (which, for 46 cases, is significantly greater than zero at beyond the 1 per cent level).

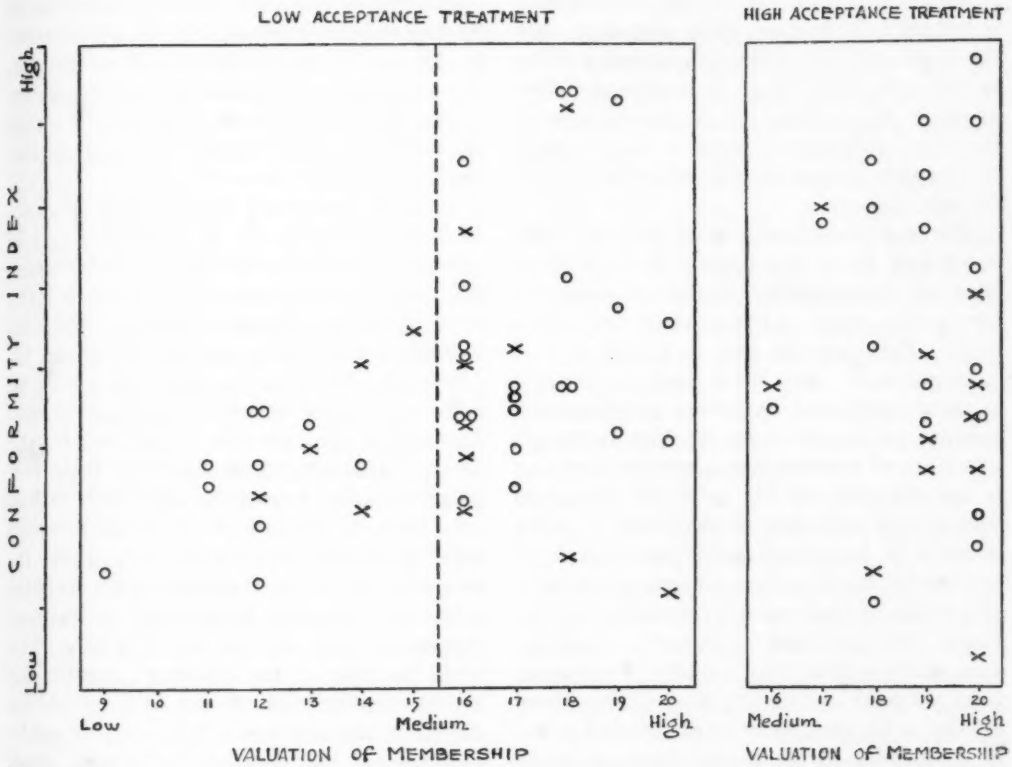

FIGURE 1. Scatter diagrams showing relation between valuation of membership and conformity within each of the two experimental treatments. (Ss actually judged most acceptable as co-workers are indicated by X; those judged least acceptable, by O.)

An examination of the scatterplot for these two variables, shown in Figure 1, reveals an important fact. Whereas low valuation members *uniformly* show little conformity, high valuation members show great variability in their conformity, some con-

forming a great deal and others very little. As indicated in Figure 1, the *low acceptance* subjects may conveniently be divided into high and low valuation samples by using the scores of 16 to 20 to define the high valuation group. (These scores include all those obtained within the *high acceptance* group, so this procedure isolates a high valuation sample within the *low acceptance* group which corresponds approximately to the *high acceptance* group in how highly membership is valued.) It is then quite apparent that the high and low valuation samples differ in the variability of their conformity. Use of the F test indicates that the variance of the high valuation sample is significantly greater than that of the low valuation sample (p less than .01).

The conformity exhibited by the *high acceptance* Ss is very similar, both in mean level and in variability, to that obtained for *lows* who have corresponding valuation scores. This may be seen in Figure 1.

In summary, one effect upon conformity of the experimental variations in acceptance appears to be mediated by the factor of valuation of membership. Learning that one is not accepted by his colleagues tends to lead to low valuation of membership which in turn is associated with low degree of conformity to the group consensus. There is also evidence that the usual relationship between valuation and conformity, which is assumed to exhibit homogeneity of variance, does not hold in this situation. Here, where loyalty to the group can be manifested either in conformity to the group consensus *or* in responsiveness to the evidence presented in the task confronting the group, high valuation members exhibit great variability in their conformity.

Relation between Actual Acceptability Ratings and Conformity. A sizable portion of the variability in conformity among the high valuation members, in both the *high acceptance* and *low acceptance* samples, appears to be attributable to their actual acceptability as co-workers. It will be recalled that the actual acceptability of each S was determinable from the proportion of the 4 or 5 other Ss present at the session who listed him as their first or second choice as a workmate. In Figure 1, the subjects with high acceptability ratings (i.e., those chosen by more than half of the other subjects) are indicated by X's; Ss with low acceptability ratings, who were chosen by less than half of the other Ss, are indicated by O's. Among the subjects in the *high* experimental treatment, those chosen less frequently as workmates show greater conformity than those more frequently chosen (p less than .06). There is a similar but non-significant trend for the Ss in the *low* experimental treatment (p less than .30). Considering all Ss with valuation scores of 16 to 20, whether in the *high* or *low* experimental treatments, the conformity exhibited by less frequently chosen Ss is considerably greater than that shown by the more highly regarded (p less than .03).

It may be asked how a person's actual acceptability as a co-worker could affect his conformity in this particular situation where he has little opportunity to learn of it. If other persons' opinions about an individual's acceptability are to affect his conformity behavior (as they seem to), he must have some sort of awareness, if only an implicit one, of these opinions. In the present situation, there was very little real communication among Ss and each S had very little chance to find out where he stood with his fellows. Almost the only direct information he obtained regarding his acceptability was contained in the fictitious ratings, supposedly made by the two men he worked with. Because, as the evidence suggests, his actual standing with respect to acceptability did affect his conformity behavior, we might conclude (a) that people are *extremely* sensitive to cues indicating others' evaluations of them, or (b) that each S carries some general social stimulus value which evokes fairly consistent reactions in others as he moves from group to group, and of which he becomes aware to some degree. If the latter is correct, S's conception of his own social stimulus value should be reflected in his general feelings or expectations about being accepted in groups and these expectations should be correlated with his actual acceptability rating in various situations.

While we have no evidence pertaining to the first of the above conclusions, some support for the latter was obtained. The actual acceptability ratings were correlated with the two measures of general expectations

about being accepted, obtained from a questionnaire given 72 of the Ss several weeks after the experiment. The first measure, which mainly reflects the person's optimism about being accepted on the basis of his work for the group, is significantly correlated with the acceptability rating ($r=.35$, significant beyond the 1 per cent level). The second measure, which mainly indicates the person's expectations about being liked personally and about achieving popularity, is not correlated significantly with actual acceptability ($r=.12$). It is impossible to interpret unequivocally the difference between these correlations; the authors know of no adequate statistical test for the significance of this difference, and in any event account would have to be taken of the relative reliabilities of the two measures of expectations. While it is unlikely that these coefficients would prove to be significantly different, they do raise the possibility that the acceptability ratings in this experiment reflect evaluations of the person's ability to contribute to the work of the group rather than of his attractiveness as a "personality." In view of the circumstances in which the ratings were made, this appears to be highly reasonable.

Finally, we may note that the first measure of expectations about acceptability, related to work for the group, is inversely correlated with conformity for Ss in the *high acceptance* treatment ($r=-.38$, significant at the 5 per cent level). It is not related to conformity for the *low acceptance* Ss. The personality-related measure of expectations about acceptance bears no relation to conformity within either sample.

DISCUSSION

There is no evidence from a comparison of the two experimental treatments that a person's feelings of being accepted affect his conformity to group norms. However, the experimental variations in acceptance produce gross variations in attractiveness of the group, low acceptance yielding low valuation of membership. Because valuation is directly related to conformity, it works against our hypothesis and, in the present case, may obliterate whatever inverse relationship between acceptance and conformity may exist. An attempt to hold valuation constant is not very successful with the present data because the number of Ss is too small to permit sufficiently fine classification. Even with a larger N, it is doubtful whether existing measures of valuation are sensitive enough to make possible a relatively precise statistical control.

Although there is no evidence from the experimental treatments that a person's feelings of being accepted affects his conformity, correlational evidence based on our Ss' actual acceptability ratings does support the original hypothesis. This evidence suggests that one of the factors determining how a high valuation member reacts to the disparity between the norm and the task cues is his actual social standing among his colleagues. A person who is highly valued as a co-worker is more likely to deviate from the group norm and give a judgment in harmony with the presented cues. Additional evidence indicates that a person's standing in this experimental situation is related to his general expectations about being accepted in groups. Further, there is a very tentative suggestion that the social standing reflected by the present acceptability ratings is related primarily to evaluations of a person's ability to work for and contribute to the group.[7]

Our evidence indicates, then, that one type of "popularity" (frequency of being chosen as a workmate) is inversely related to conformity, at least for high degrees of valuation of membership. This is the opposite of the relationship between popularity and conformity that has been observed in prior studies.[8] The difference between the present and earlier findings may be interpreted in

[7] Findings resembling these have been reported by R. Lippitt, N. Polansky and S. Rosen, "The Dynamics of Power," *Human Relations*, 5 (No. 1, 1952), pp. 37–64. In boys' camps, they found that a group member tends to perceive correctly the degree of power (ability to get others to do what he wants them to) attributed to him by others. Attributed power seems to be associated with certain physical, intellectual and social abilities. These investigators found boys with high power to be less receptive to direct influence coming from other members; unfortunately, they have no evidence indicating the relation of this power to conformity to norms.

[8] C. I. Hovland, I. L. Janis, and H. H. Kelley, *Communication and Persuasion*, New Haven: Yale University Press, 1953, pp. 149–154; T. M. Newcomb, *op. cit.*, pp. 54–73.

several different ways. As pointed out elsewhere,[9] popularity may have different implications depending upon whether it is awarded for conformity or for some other reason. It is not unlikely that the acceptability ratings in the present investigation reflect the latter: on the basis of his perceived ability to contribute to group success, a person may be awarded a social rank which carries with it considerable freedom to deviate from social norms. Previous studies may have tapped other kinds of popularity, such as that related to personal attractiveness. The awarding or withholding of this latter kind of social rank may be highly dependent upon how closely a person conforms.

An alternative interpretation of the divergence of our findings from earlier ones may be made in terms of differences in the kinds of situations studied: popularity may be positively correlated with conformity in all the usual circumstances where conformity is "good" for the group, but this relationship may reverse itself when conformity becomes detrimental to group achievement.[10] At any rate, the present evidence strongly suggests that *in certain circumstances, for some kinds of popularity,* the higher the social rank, the less the conformity to group norms.

An incidental finding of this study, that feelings of acceptance greatly affect valuation of membership, provides experimental confirmation of a relationship observed in natural settings. Within a community organization, Jackson [11] found that being valued (chosen) by other members of a group increases a person's attraction to that group.

While valuation of membership has been shown on several prior occasions to be positively correlated with conformity,[12] the particular configuration of this relationship observed in the present study seems to be a new finding. To our knowledge, the tendency for greater variability of conformity to be exhibited by high valuation members has not been reported before.

One possible interpretation of this result is in terms of the conflict situation in which, as a result of our experimental procedure, the high valuation member probably finds himself. In the late phases of the judgment problem, he faces, on the one hand, pressures to conform to the apparent group opinion and, on the other, accumulating evidence which indicates the invalidity of the group consensus. Assuming that the high valuation member not only values the group highly but is greatly concerned about its success and welfare, he is likely to feel both of these pressures to a high degree: he is both highly susceptible to the conformity producing pressures and highly motivated to see the group make a good score. Conse-

[9] C. I. Hovland, I. L. Janis, and H. H. Kelley, *op. cit.*

[10] Partial support for this interpretation is obtained from a detailed analysis of conformity scores on early (#2–4), intermediate (#5–7), and late (#8–10) items in the series. Among the high valuation subjects, the differential conformity of Ss with high and low acceptability ratings increases steadily from early to late items. On the first three problems, when the Ss have very little evidence that conformity is detrimental to the group's score, the less acceptable Ss conform little more than the highly acceptable ones (p=approximately .12). On the last three items, the less acceptable Ss conform considerably more (p less than .02). This trend is a statistically significant one as shown by the relative positions of highly acceptable Ss and less acceptable Ss with respect to the regression line of late conformity scores upon early ones. Significantly more of the less acceptable Ss are above this line (p less than .02) which means that among Ss with a given conformity score on the early items, those Ss judged less acceptable have higher conformity scores on the later items than do those Ss judged more acceptable. In brief, this analysis suggests that as the evidence becomes clearer that the norm is operating to the detriment of group success, a person's actual acceptability as a co-worker becomes a better predictor of his conformity to the norm. Possibly related to the foregoing is the consistent but non-significant tendency for the high valuation subjects, as compared with the low valuation subjects, to become increasingly more heterogeneous in their conformity. The scatter diagram of the relation between conformity and valuation tends to assume the heteroscedastic pattern shown in Figure 1 to a greater degree as the incompatibility between the norm and the external evidence increases.

[11] J. Jackson, "Analysis of Interpersonal Relations in a Formal Organization," unpublished Ph.D. dissertation, University of Michigan, 1952. Reported in D. P. Cartwright and A. F. Zander (Eds.), *Group Dynamics,* Evanston: Row, Peterson, 1953, p. 424.

[12] L. Festinger, S. Schachter, and K. Back, *op. cit.;* H. H. Kelley and E. H. Volkart, "The Resistance to Change of Group-Anchored Attitudes," *American Sociological Review,* 17 (August, 1952), pp. 453–465.

quently, he is in a conflict situation where the opposing forces are strong. The large variability in conformity found for high valuation members probably reflects this predicament. Apparently some of them resolve the conflict in favor of the norm while others resolve it in favor of the physical evidence.

In contrast to the situation confronting the high valuation member, that in which the low valuation member finds himself is fairly simple. He cares little about conforming or not, and is little susceptible to the social pressures acting on him. On the other hand, he is probably motivated to see the group win because he stands to profit personally from this eventuality. His behavior is largely motivated, then, by a single consideration—to make the correct judgment. Consequently, the low valuation member is likely to be responsive to the cues presented by the task and to conform very little to the group norm.

One apparent implication of the findings and interpretation just discussed should be clarified. In a situation where group norms are out of touch with reality and lead to erroneous conclusions, it is fairly obvious that conformity to them may work to the detriment of the group. In these circumstances, a group which is little valued by its members is likely to make better adaptations to reality than one which is highly valued. The group with little power over its members may, in these special circumstances, have greater survival ability than one with great power. In this study, the particular set of circumstances for which this generalization holds was created experimentally. The question of when these conditions develop in the natural course of group life poses a fascinating problem for field investigations of small groups.

SUMMARY

Conformity to a group norm was investigated in a setting where, because the norm is discordant with reality, conformity is detrimental to the success of the group. It was hypothesized that under these conditions members who feel highly accepted by their colleagues will conform less than members who feel little acceptance. A comparison of subjects in two experimental treatments, intended to induce different feelings of acceptance, failed to support the hypothesis. However, confirmatory evidence was provided by the relation between conformity and the individual's actual acceptability, as judged by others. Among persons who place high value upon their membership in a group, those who are judged to be highly acceptable as co-workers were more likely to deviate from the norm than members who are not considered very acceptable.

As in previous studies, valuation of membership was found to be positively correlated with conformity. However, variability in conformity was greater for high than for low valuation members. This was interpreted in terms of the conflict high valuation members probably experience as a result of being motivated both to conform to the norm and to help the group achieve success by responding to the incompatible external cues.

THE RELATION BETWEEN GROUP MEMBERS' SELF-CONFIDENCE AND THEIR REACTIONS TO GROUP PRESSURES TO UNIFORMITY *

GODFREY M. HOCHBAUM

U. S. Public Health Service

THE tendency of social groups to produce uniformity of opinions, beliefs, attitudes and behavior among their members has been observed for a long time. A recent attempt to analyze this phenomenon has been made by Festinger and his associates.[1] Approaching the problem conceptually, a system of interrelated hypotheses has been formulated in such a manner that they yield to experimental tests. A considerable amount of experimental data has been obtained by controlled laboratory studies in support of this systematic analysis of group process.

One of the principal concepts assumed to underlie the observed uniformity in social groups is that of "social reality." This concept refers to opinions or beliefs that cannot be checked against a physical, objective referent. The only verification for an individual's opinion would be through agreement with persons whom he accepts as valid reference points on such issues. Social groups form very strong reference points on issues to which they are relevant. If a particular opinion is in agreement with the opinion of a relevant social group, it appears to the person holding it as validated, and it possesses "reality"—that is "social reality"—for him in much the same sense as an opinion which he checked against a physical referent.

If any differences exist in a group concerning an issue that is relevant to the group, the members' need for obtaining reality for their opinions, according to this theory, gives rise to tensions which exert themselves in pressures to re-establish uniformity. Some of these pressures are exerted on deviant members by the rest of the group through communication; forces arise within deviant members to change their own opinions so as to agree with the group standard; under certain conditions the group may reestablish uniformity by rejection of the deviant members. The form that these pressures to uniformity take, their magnitudes, the direction of the forces acting on the members, and the resulting behavior are thought to depend on such variables as the cohesiveness of the group, its size, the magnitude of discrepancy in the opinion, the hierarchical structure of the group, or, more specifically, on the perceptions that the group members have of these variables. In other words, the variables considered are those that are inherent in, or grow out of, the total group situation; they are treated conceptually as the resultant perceptions of all the individual members. For example, "cohesiveness" is defined as "the resultant of all the forces acting on the members to remain in the group."[2] Even the forces acting on individual members of the group are implied to be forces generated in and by the group only. There is only meager reference to those forces acting on an individual member whose sources lie primarily outside the group structure, such as his personality, his past experiences, or the perceptual tendencies and expectations he brings to the group.

No matter how valid any group theory may be, however, it cannot explain fully all group phenomena without taking into account those influences whose sources lie within the individual members and which interact with forces that can properly be called "group forces." The present study is designed to explore the interaction between these two types of forces. It demonstrates

* The studies to be reported in this article have been carried on by the Laboratory for Research in Social Relations at the University of Minnesota under grants from the Graduate School; the College of Science, Literature, and the Arts; and from the Carnegie Corporation.

[1] L. Festinger, *et al., Theory and Experiment in Social Communication.* Ann Arbor: Research Center for Group Dynamics, Institute for Social Research, University of Michigan, 1950.

[2] For a more thorough discussion of the theory and of supporting experimental data, see Festinger, *et al., op. cit.*

how certain expectations and perceptions brought to the group by the individual affect his behavior in the group and modify tendencies that would have been predicted on the basis of the nature of the group alone. At the same time an attempt is made to conceptualize these factors and to integrate them with the theoretical system outlined above.

One of the concepts that is central to the theory is that of "dependence," defined by Schachter as "the extent to which members of a group rely on one another as reference points in establishing social reality." [3] One would expect that a great degree of uncertainty on the part of a person concerning a given opinion will be associated with a greater need for its verification—with greater dependence; with increasing belief in its validity this dependence need will increase. Confidence in the validity of such an opinion (its reality) has its source in past verification through appropriate referents. It is not necessary, however, that the specific opinion has been validated in this manner. If closely related opinions possess reality, the specific opinion too will be perceived as correct. Thus, if a person is called upon to judge a given new issue, his opinion will normally be one that is harmonious with opinions he already holds. The degree to which he is convinced of the correctness of this new opinion will be a function of the degree to which the older opinions are relevant to the new issue, and of the degree to which they possess reality for him. If a person finds that his opinions in a general content area have been repeatedly verified, he develops confidence that he is competent to judge new issues within this general area, and his opinions within such an area will possess reality even without further validation.

Accepting this reasoning, we can then make the assumption that a person who is confident of his competence to judge correctly a given type of issue will rely less on others as social reference points in establishing reality than will a person who lacks confidence in his competence to do so. Or, in other words, a person's dependence on social referents is inversely related to his confidence in his competence to judge the issue in question. Based on this, two hypotheses can be formulated:

> Hypothesis I. Given a group member whose opinion on a group-relevant issue deviates from the opinion held by the rest of the group, and on whom pressures are exerted to change his opinion towards greater conformity with the group standard, his resistance to these pressures will be greater the more competent he perceives himself to be concerning the issue on hand.
>
> Hypothesis II. Pressures to uniformity are greater on the member who perceives his level of competence as low than on the member who perceives his level of competence as high.

Perception of one's own level of competence is to a large degree also a function of agreement with appropriate social referents. It should therefore be subject to the same influences as one's confidence in the validity of a single opinion. Hence:

> Hypothesis III. The more competent a person perceives himself to be concerning a given group-relevant issue, the less will his perception of his competence be influenced by disagreement with his reference group; conversely, the less competent a person perceives himself to be, the more will his perceived competence be further decreased by disagreement with his reference group.

THE EXPERIMENTS

General Outline. We attempted to create four conditions in different individuals by first creating self-confidence regarding the task assigned to the experimental groups in about half of the subjects, and feelings of inadequacy concerning the task in the other half. About half of the subjects in each of these two conditions were then made to perceive themselves as deviates from the almost unanimous group decision about the problem on hand; and the remaining half of the subjects in each of the two self-confidence categories to perceive themselves as sharing their opinions with the rest of the group, except for one person who was seen as a deviate from the group standard. The four conditions which we thus created can be described in this manner:

> In the first condition: Perception of own level of competence regarding the group task

[3] S. Schachter, "Deviation, Rejection and Communication," in L. Festinger, *et al., op. cit.*, p. 63.

as very high, and perception of himself as a deviate from the group opinion. We designate all such subjects as *high-deviates.*

In the second condition: Perception of own level of competence regarding the group task as very high, and perception of himself as sharing his opinion with the group. We designate all such subjects as *high-modals.*

In the third condition: Perception of own level of competence regarding the group task as very low, and perception of himself as a deviate from the group opinion. These we designate as *low-deviates.*

In the fourth condition: Perception of own level of competence regarding the group task as very low, and perception of himself as sharing his opinion with the group. These we designate as *low-modals.*

Through a series of votes on the problem which was assigned to the group for discussion, we could observe shifts in opinion. A period of "discussion" served to collect data on the direction and amount of pressures to conform and was followed by another vote on the problem.

The Subjects. Volunteers were recruited from a number of freshmen and sophomore classes at the University of Minnesota and at the Northwest Missouri State College, presumably for a study on "how people judge one another and form opinions about other people's character and personality." One hundred and forty two subjects participated, of which 52 were men and 90 women. Eighty-two were students at the University of Minnesota, the remaining 60 at the Northwest Missouri State College.

The Physical Design. Each subject participated in one experimental session as a member of a group. Twenty-two such groups were used, of which thirteen consisted of seven members each. Six groups had six members, and the remaining three had five members each.

The subjects were seated in such a way that they could not see the papers that any of the others wrote or received. Each one was assigned a code-number for the experiment. He did not know the code-numbers that any of the other members of his group had received. Precautions were taken to make it impossible for any person to deduce the code-letters of the others.

The Experimental Manipulations. Phase I: Creation of the "High"—"Low" Dichotomy. At the beginning of the experimental session, we again told the subjects that we wanted to learn how people form opinions about others. In order to study this problem, we would give the group short case histories. Each would describe a person, containing information about his childhood, his relationships to his parents, siblings, and others, about important events in his life and about how he reacted to them. This case history would be followed by the description of an event that took place when the person was an adult. The group would then be called upon to predict how this person would act in such a situation. We stressed the "facts" that (a) these were condensed versions of actual case histories taken from clinical files and that the actual behavior of these persons in the situation was known, and (b) that the background contained all the information and all the clues necessary for a "correct" prediction of the person's behavior.

We furthermore informed the subjects that it was a "well-established" fact that some people have a special ability to pick the important and crucial cues from case histories and are subconsciously sensitive to factors that shape man's behavior. Persons with this ability are able not only to sense such cues and weigh them correctly against each other, but also to come up with the correct prediction. Others, however, seem to lack the required ability and hardly ever succeed with such a task.

We then stated that in order to give the participants a chance to familiarize themselves with the main task of the study, they would be given five "practice" cases considerably shorter and much easier than the main histories. We emphasized that it had been found in the past that those who did well on these practice cases also did well on the main problems, while those doing poorly on the practice cases also were not too successful in the later phase.

Before handing out the case histories we laid great stress on the group nature of the task. We told the subjects that each of the many groups who participated in this study was formed so as to be different in some aspect from the others. We presented as the main purpose of the study the discovery of how these groups differed both in respect to ultimate success with the task and the

mode of attacking it, that is, what cues they would use, how they would interpret them, and how logical and correct their conclusions would turn out to be. No scores or ratings would be given individual members, but each group would receive a "group-score" based on the number of members who correctly predicted the behavior of the person in the case history.

Finally, we handed the subjects copies of five practice-cases. Each had three possible predictions from which the subjects were to choose the one they considered the correct one. Each subject marked his choice on a piece of paper without, of course, communicating with any of his neighbors. The choices made were collected and handed to an assistant seated in the rear of the room. He presumably tabulated the results and prepared reports to each subject on his success with the practice cases. Actually, two kinds of reports had been prepared beforehand. The reports distributed to the subjects to be in the "high" self-confidence category told each one that he had not only answered all five problems correctly, but that he was the only one of his group who did so and that the other members of his group had succeeded only with three, two, or only one of the five problems. The reports distributed to the subjects to be in the "low" self-confidence category told each one that he had solved only one problem correctly while the other members of his group had succeeded with at least three and one even with all five of the problems.

Subjects in the "high" self-confidence category should then feel not only that they possessed the "special ability," but also that they were definitely better than the other members of their group. In the case of the subjects in the "low" self-confidence category, they should perceive themselves as lacking the ability and actually as being the poorest members of the group.

After the significance of these reports was again impressed upon the subjects, we distributed another case history.

Phase II: The Deviant-modal group structure. This case history, the *Case of Horace,* was of the same kind as the practice cases, though longer, more detailed, and more complex. This time, five possible solutions of the problem were provided. It was pointed out to the group that this case history would be discussed by the group, and that this was the task on which the group would receive a rating. It was explained that the five choices presented a scale of possible solutions from one extreme to the other, so that we could decide not only whether a choice was correct, but also how far it was removed from the correct one.

A preliminary vote was taken, the results of which, it was explained, were not to count toward the group score but only to establish some initial idea of the group feeling before commencing with the group discussion. The subjects marked their individual choices on a slip of paper on which they also marked, on a seven-point scale, how sure they were that their choice was the correct one. These slips were collected and given to the assistant who again presumably tabulated the results and prepared "reports."

Actually, sets of these reports had been prepared beforehand for any possible vote and had only to be pulled from the file for distribution. About half of the subjects with a high degree of self-confidence, and about half with a low degree of self-confidence were given reports that told each one of them that he was the only one in the group who had chosen the particular answer he had actually marked and that all the others had chosen solutions tending towards the opposite extreme of the scale. These other members with the solutions they had presumably chosen, were identified only by their code-letters. Subjects receiving this type of report were our "high-deviates" or "low-deviates," respectively. The other subjects in the two self-confidence categories received reports which told them that, with the exception of one deviate, all the rest of the group had chosen the same or, at most, an adjacent solution. These subjects were our "high-modals" or "low-modals" respectively.

Having thus created our four experimental conditions, "high-deviates," "low-deviates," "high-modals," and "low-modals," we proceeded to take the *second vote* on the Case of Horace. This vote was justified by a statement to the effect that in view of the difficulty and complexity of the problem, the subjects had not had sufficient time to study it. The second vote was pre-

sented as an opportunity to change one's vote if a more thorough reading should lend a different slant to the case and no reflection of a negative nature was attached to changing one's mind.

As before, the subjects voted on a slip of paper, again also expressing their degree of certainty concerning the correctness of their choice. Changes between the first vote and this vote can be interpreted as due mainly to the intervening perception of the group opinion structure that the subjects had received on their "reports" of voting.

As soon as the slips had been collected, the *discussion* period followed. The discussion took place by means of an exchange of written notes. This procedure was justified to the subjects by explaining that it avoided contamination by personal likes or dislikes or by the ability to speak in front of others; thus it would be possible to rule out all personal factors, basing decisions only on facts and logic.

Each note was to be addressed to one other member by writing his code-letter on the top; the writer did not identify himself. Each subject had been told what solutions other members had chosen, but these members had been identified only by their code-letters. Hence he was forced to address his notes not really to persons, but to code-letters representing certain opinions. As many notes as desired could be written. In order to determine subsequently the writer of each note and the sequence in which the notes had been written, each blank piece of paper carried a hidden mark.

The notes were collected by the experimenter as they were written and presumably delivered to the addressee. Actually, however, they were kept. Prewritten notes were distributed in their place. These had been prepared in such a manner that each subject received three notes whose content made them appear as having come from members holding the same, a slightly different, and a radically different opinion respectively. They stressed the modal or deviant position of the recipient rather than presented strong arguments for or against any particular opinions. They were as similar as possible from member to member except for variations in accordance with the opinion registered by the recipient.

For about twenty-five minutes notes were collected. The prewritten notes were distributed at a fairly regular rate throughout the same period. At the end of the period, a *final vote* of the Case of Horace was taken in the same manner as the previous two. This vote, the subjects were told, was the vote that determined the group score.

While the assistant presumably prepared reports on the results of this vote, each subject was asked to give on a slip of paper a self-rating on his ability to perform this kind of a task—predicting behavior from case histories. A four-point scale was provided for this purpose. On the same sheet he was also requested to state whether or not he would be willing to participate in future experiments of the same sort as the present one.

Phase IV: The Catharsis Session. The Catharsis Session, required in all such experiments, served to draw the subjects out concerning any suspicions they might have had about the experiment, to learn more about their perceptions and about the success of our attempted inductions, and to inform them finally about the real nature of the experiment in order to avoid any feelings of misgivings or anxiety to be carried away.

SUCCESS OF THE INDUCTIONS

The validity of the findings hinges upon the success with which at least the following basic conditions were induced:

(1) The subjects in each experimental session must have formed a psychological group rather than have functioned as more or less isolated social units.

(2) The two extreme perceptions of the subjects' own level of competence must have been induced successfully.

(3) Subjects must have been aware of, and must have accepted, their deviant and modal positions, respectively.

Did the subjects perceive themselves as members of a group? Evidence on this point is provided in the question asked toward the end of the experimental session concerning their willingness to participate in future experiments of the same kind as the present one. In response to this question, less than five per cent said they would prefer not to participate again. This indi-

cates that the group activity during the experiment held at least some attraction for the participants—one source of identification with a group. Furthermore, the goal of the activity—the group score—could be reached only as a group, not by individuals, which is another source of identification with a group.

Was the induction of feelings of confidence and diffidence in the subjects' own level of competence successful? The success of our inductions here is attested to by the results of the self-ratings performed by the subjects towards the end of the session: eighty-eight per cent of the "high," and only 21 per cent of the "low" rated themselves as above average on such a task. The mean self-rating by the "high" subjects on the four-point scale on which "3" represented the highest and "0" the lowest self-rating, was 1.92, that of the "low" subjects 1.10. The tetrachoric correlation coefficient between "high" and "low" on the one hand, and a dichotomy of the self-ratings is .72.

Were the subjects aware of, and did they accept the opinion structure of the group? Because of the nature of the inductive procedure in Phase II of the experiment which made subjects perceive themselves as either deviant or modal members of the group, only suspicions concerning the veracity of the "reports" could have interfered with the acceptance of the opinion structure as presented to the subjects. There was no evidence that such a suspicion was entertained by any of the subjects.

RESULTS OF THE EXPERIMENT

In the earlier discussion of the problem, four hypotheses were derived, partly based on the theory dealing with the effects of dependence on pressure to uniformity, and partly from some additional assumptions concerning the role of a member's perception of his own competence on the group task.

With reference to the first of these, one objective measure of a subject's resistance to pressure to change was provided in the experiment by change—or lack of change—between the first and last votes of each subject in Phase II (Case of Horace). It is to be expected that the proportion of "low-deviates" who change their votes in the direction of the group standards will be greater than the proportion of "high-deviates" who will change their votes under the same conditions. The expectation was fulfilled as can be seen in Table 1. The difference between "high" and "low-deviates" is significant on the .001 level. The comparison between the proportion of deviant and modal members who change their opinions strongly reinforces the findings by Schachter, for 54 per cent of all deviates and only 15 per cent of all modals shifted their position in the direction of opposing opinions. Of these modals some remained, even after their change, within the range of the modal sub-group, in other words they changed merely from an extreme position to a less extreme one which still roughly represented the same side of the scale. Actually, then, only four "low-modals" and one "high-modal," or a total of 7.5 per cent of the modals, shifted their opinions to a deviant position. It should be noted, however, that while the difference between "low-deviates" and the combined modals is highly significant (on the .001 level), the difference between the "high-deviates" and the combined modals, though in the same direction, is not ($p=.22$).

Effect of Duration of Pressures on Change of Opinion. The assumption can be made that the magnitude of pressures to conform increases with an increase in the time passing between the first perception of an existing difference and the resulting acts of actually conforming to or rejecting the group standard. Subjectively, a difference that at first may appear as perhaps due to misinterpretation of the data by one or the other of the persons involved, takes on more significant dimensions if, with the passage of time and an exchange of ideas and arguments, still no decrease in the difference occurs. From this we can develop this derivation from our first hypothesis:

> *Derivation 1a.* Deviates from a group opinion who perceive their level of competence concerning the issue on hand as high will, if they change at all, resist pressures to conform longer than will deviates who perceive their level of competence as low.

In the experiment the second vote on the Case of Horace was preceded by the

perception of the deviant and modal positions and was followed by the "discussion" period which ended in the final vote. Since the notes passed out to the subjects stressed their positions in the group and the presence of deviant opinions, they also tended to reinforce the perception of continuous disagreement. Since furthermore considerable time passed between the votes, changes in opinion between the second and the third votes would provide the measures to test the derivation. It was found that of the nine "high-deviates" who succumbed to pressures to conform, seven (or 78 per cent) manifested the change only at the final vote; of the 31 "low-deviates," however, only nine (or 29 per cent) maintained their original opinion until the final vote.

Table 1. Magnitude of Changes in Opinion of the Case of Horace in Each of the Four Induced Conditions of Self-Confidence

Magnitude of Change *	High Deviate	Low Deviate	High Modal	Low Modal	Total
No change at all	30 (.77)	4 (.11)	32 (.94)	26 (.76)	92
Partial change	4 (.10)	2 (.06)	1 (.03)	4 (.12)	11
Complete change	5 (.13)	29 (.83)	1 (.03)	4 (.12)	39
Total	39	35	34	34	142

Numbers in parentheses denote proportion of subjects under the column heading who change to the degrees indicated.

* "Partial change" involves some change in the direction of the group norm but not large enough to move into the modal half of the scale; "complete change" indicated a change into the modal half of the scale.

Resistance to pressure to change should be reflected not only in the proportion of deviates who change, but also in the magnitude of change toward the modal opinion. Since the five possible solutions to the Case of Horace formed a scale, a deviate could shift his opinion either part or all of the way towards the modal opinion. In the former case he would remain a deviate, although he has decreased the discrepancy between himself and the group; in the latter case he has, of course, succumbed completely to group pressures. Table 1 shows that roughly only half of those "high-deviates" who change at all, change all the way, but that approximately 93 per cent of changing "low-deviates" join the modal opinion.

The Exertion of Pressures to Uniformity through Communication. Pressures to uniformity, so far as they find public expression, take place through the medium of communication. Our second hypothesis would therefore lead us to expect that persons who perceive their level of competence concerning a given group-relevant issue as high will communicate less to other group members concerning the issue than persons who perceive their level of competence as low.

The data obtained on this point are inadequate and must be considered inconclusive. However, from our concept of dependence we might hypothesize that differences will appear also in the particular form and direction in which pressures to uniformity will manifest themselves in communication. These pressures may express themselves in communication in the form of pressures to change others, that is, to change the opinion of the recipient, or in the form of pressures to change one's own opinion—the opinion of the writer himself. This can be stated as a derivation from our second hypothesis.

Derivation 2a. If differences of opinion exist in a group concerning an issue relevant to the group, pressures to uniformity will tend to take the form of pressures on others to make them change their opinions in the case of members who perceive their own level of competence as high, and will tend to take the form of pressures on members themselves to change their own opinions in the case of those who perceive their own level of competence as low.

A content analysis of the notes written was performed. The purpose was to differentiate between notes reflecting attempts at exerting pressure on others to change,

and notes manifesting a pressure on the writer to change his own opinion. Operationally the former were defined as notes containing arguments against, or criticism of, the recipient's opinion, personal attacks on the recipient's competence or intelligence, references to one's own superior ability or insight, emphasis of the recipient's deviant or one's own modal position in an argumentative manner, or any other expression of desire to change the view of the recipient. Pressures on the writer of a note to change his own opinion were taken as being indicated by requesting explanation or justification from the recipient for his opinion, references to the writer's own inadequacy and lack of ability, reference to the recipient's superior competence, defensive appeals to the recipient to understand the writer's dilemma, and the like.

All notes were analyzed by three independent persons. Those notes whose contents appeared doubtful and concerning which discrepancies existed among the judges were eliminated and the rest dichotomized. The distribution obtained is given in Table 2. As stipulated by the derivative, the highest proportion of notes manifesting attempts to change the recipient's opinion are written by modals, and more by "high" than by "low" members. The greatest proportion of notes manifesting pressure on the writer to change his own opinion is found with the "low" deviates. Modals wrote considerably fewer such notes than did either of the deviant categories. However, the relatively rigid criteria by which these notes were classified led, as can be seen in the Table, to a relatively high proportion of unclassified communication. Therefore, while these findings tend to support our reasoning, they cannot be regarded as reliable evidence.

Confidence in the Correctness of One's Particular Opinion and Change of Opinion. Let us reiterate an earlier statement that resistance to pressures to change is correlated with the degree to which an original opinion already possesses reality for the person holding it. This reality, in the experimental situation, is reflected in the certainty expressed by subjects concerning the correctness of their opinions. A corollary to our first hypothesis would then read:

> *Corollary to Hypothesis I.* The more confident a deviate is of the validity of a specific opinion he holds concerning a group-relevant issue, the more will he resist pressures to change this opinion.

Among the forty deviates who subsequently changed their opinions in the direction of the group standard, the mean degree of certainty expressed in their first vote was 3.85; in the same vote the mean certainty expressed by 34 deviates who subsequently continued to maintain their deviant position was 5.09. We may expect, moreover, that if a deviate is sufficiently certain of the validity of his opinion to resist group pressures for some period of time but then finally does change, this change will be preceded by a decrease in his confidence. Finally we would also ex-

TABLE 2. DISTRIBUTION OF NOTES IMPLYING PRESSURES ON OTHERS AND PRESSURES ON THE WRITER UNDER THE FOUR EXPERIMENTAL CONDITIONS

	High Deviate	Low Deviate	High Modal	Low Modal	Combined High	Combined Low
Total number notes written	102	80	146	178	248	258
Proportion expressing pressure on recipient	.46	.22	.62	.54	.54	.44
Proportion expressing pressure on writer	.14	.30	.06	.08	.10	.14
Proportion not classified *	.40	.48	.32	.38	.36	.42

* "Proportion not classified" includes notes that were either doubtful or did not express identifiable pressure in either direction. Since the proportion of classified notes represent all notes clearly oriented one way or the other, these proportions can be regarded as acceptable, though crude, indices of underlying tendencies.

pect that, once such a deviate has changed his opinion so that he is now in agreement with what he perceives as the group standard, this agreement with his reference group should result in an increase in his conviction that this new opinion is correct.

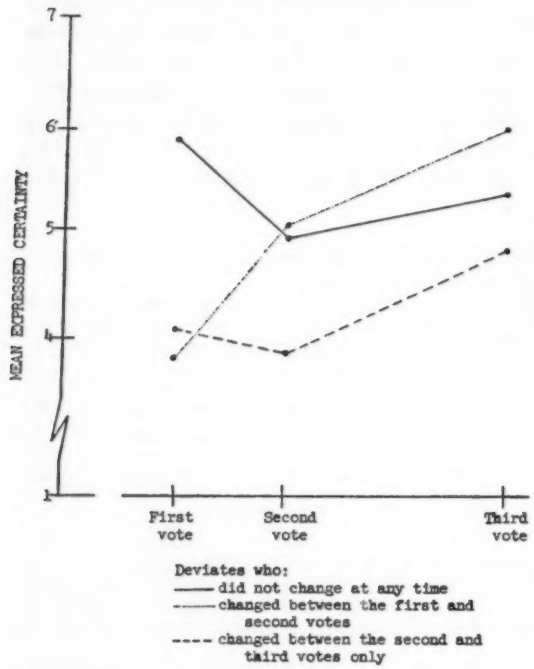

FIGURE 1. Mean expressed certainty of first, second, and third opinions expressed by deviates on the case of Horace, and change of opinions between the three votes.

Figure 1 shows the data pertinent to these two expectations for three types of deviate: (1) Deviates who changed their opinions between the first and the second votes, that is immediately upon perceiving themselves as deviates. These subjects expressed relatively little confidence in their initial opinions, but once they changed so as to agree more closely with the group, they became more certain of their new opinion and became still more certain with prolonged agreement. (2) Subjects who maintained their original deviant opinion through the second vote but yielded to prolonged pressures to uniformity and conformed to the group opinion with their final vote. These subjects were slightly more certain of their original opinions than the first group but exhibited a decrease in certainty until they changed their opinions. The new, conforming opinion was then held with considerably greater certainty than their original opinions. (3) Subjects who maintained their deviant position throughout the experimental session. These subjects started out decidedly more certain of their original opinions but this certainty, too, decreased up to the second vote. Thereafter, contrary to expectation, they became again more certain of their deviant opinions although this increase was relatively slight. We might hazard the guess that these subjects at some point after the second vote rejected the group as an appropriate referent. Such a rejection would mean that they fell back on themselves as competent judges, no longer were subjected to the influences exerted by the group, and therefore their confidence in the soundness of their judgments became independent of agreement or disagreement with the group.[4]

EFFECTS OF THE GROUP ON THE SELF-CONFIDENCE OF ITS MEMBERS

In our earlier theoretical discussion we have maintained that self-confidence, or confidence in one's competence concerning a given issue, is a function of social reinforcement in the past. If a specific opinion on a particular issue is in agreement with an appropriate reference group, one's confidence in the validity of this opinion increases, as was demonstrated in the preceding paragraphs. In much the same manner, if a person finds several of his opinions within a given content area in agreement with his reference group, his feelings of competence will decrease. Our third hypothesis stated earlier, was based on this reasoning.

In our experiment we have two temporally separated measures related to the members' self-confidence. One is the induced condition ("high" and "low"), and the other

[4] It might be pointed out that Asch described as one of the main characteristics of the individuals who resisted group pressures, "independence based on confidence in one's perception and experience." On the other hand, the primary factor in the case of the conformer was loss of such confidence. See S. E. Asch, "Effects of Group Pressure upon the Modification and Distortion of Judgments," in H. Guetzkow (Ed.), *Groups, Leadership and Men*, Pittsburgh: Carnegie Press, 1951.

is the self-rating obtained in the third phase of the session. Perception of the group opinions occurred between the two. According to the hypothesis a tendency should appear for deviates to rate themselves relatively lower than modals. Although the two indices are not directly comparable, we could stipulate that, on the average, all subjects in whom feelings of high competence had been induced, should rate themselves relatively uniformly high, while subjects in whom feelings of low competence had been induced, should rate themselves relatively uniformly low. If, within each of these two categories, deviates rate themselves significantly lower than modals, our hypothesis would appear as being supported. The mean self-ratings of the "high" deviates and "high" modals were 1.95 and 2.21, respectively, the difference being not significant. The mean self-ratings of the "low" deviates and "low" modals were .74 and 1.24, respectively, and this difference is significant on the three per cent level. While this is only circumstantial evidence, it tends to lend some support to our hypothesis, that the degree to which a relevant reference group can influence the perception that a member has of his competence is inversely related to his initial level of self-confidence.

CONCLUSIONS

The study here reported intended to relate certain personality variables to the conceptual analysis of group processes developed by Festinger and his associates in order to demonstrate that group process cannot be completely understood nor group behavior reliably predicted without integrating the characteristics of the individual members of the group into the scheme. A number of hypotheses were conceptually derived from considering one aspect of personality—confidence in one's own ability to deal successfully with the task concerning which his group serves as a special referent —and analyzing it within Festinger's and Schachter's conceptual framework.

In order to test these hypotheses, a series of experiments were conducted, and here reported, in which a group structure was created which was similar to that created in Schachter's experiments but with the additional variable of "self-confidence" on the part of the group-members concerning their own ability to deal with the group task. The principal findings can be summarized as:

(1) Even though the group-conditions favorable to change of opinions on the part of deviates from a group norm exist, the occurrence of such a change, its extent, and the duration of resistance to pressures to conform will be affected by the deviates' perceptions of their own ability to deal successfully with the issue under question.

(2) The effect of agreement or disagreement with an appropriate reference group on a person's perception of his ability to deal successfully with the issue concerning which the group serves as a referent is inversely related to the person's initial perception of his level of ability concerning the issue.

These findings, as well as other more specific ones discussed in the body of the article, do not contradict the hypotheses developed by Festinger and Schachter. Rather, inasmuch as the present experiments represent partial replications of those reported by Schachter, the broad behavioral tendencies manifested here are the same as observed there. The present findings do, however, demonstrate that any valid analysis of group process and prediction of group behavior cannot be successful without taking account of the group members as individuals, of their individual characteristics, and those past experiences and perceptual expectations which they bring to the group situation. The interaction between such "individual dynamics" and "group dynamics" may be subtle and certainly is complex, but group behavior is always a function of the interaction of both.

DEVIATION AND REJECTION: AN EXPERIMENTAL REPLICATION *

RICHARD M. EMERSON
University of Minnesota

THE study reported here is a replication of an earlier experiment conducted by Stanley Schachter, entitled "Deviation, Rejection and Communication." [1] The replication was designed to study the *range of generality* of the initial findings, consisting of a controlled analysis of the same conceptual relationships in a different empirical universe. Before presenting the findings of the replication it will be of value to review in brief the theoretical framework and the experimental design.[2] The final section will deal with important discrepancies between the two experiments.

THEORY

Pressures toward uniformity. It is a common observation that within any social group forces operate toward uniformity of attitude and belief. Schachter describes one origin for such forces in the principle of "Social Reality:" "On an issue for which there is no empirical reference, the 'reality' of an opinion is established by the fact that other people hold similar opinions." [3] It should be noted that the operation of this principle depends upon two conditions:

(1) The issue must be objectively ambiguous due to the absence of evidence or lack of evidence at the person's command.

(2) The person must be motivated toward forming a valid judgment on the issue.

To the extent that these conditions hold, this theory states that pressures emerge to establish and maintain uniformity of opinion, since such uniformity provides the major support for personal correctness.

Cohesiveness. The cohesion of a group is separately defined as the summation of forces acting upon members to remain in the group. One source of such cohesion is the interest which members have in the issues and purposes advanced by the group. Thus, cohesion may be coordinated to the second condition above, making possible the derivation of the following major hypothesis: *Pressures toward uniformity vary directly with group cohesion.* The original experiment and its replication were designed to test this hypothesis in two separate empirical settings.[4]

Given a cohesive group, pressure toward uniformity will be manifest to the extent that deviate opinions are perceived within the group. Given the presence of a deviate, uniformity may be restored in one of three ways: (a) by exerting pressure upon the deviate, through communicating to him, such that he changes his position on the issue; (b) if he resists change, by rejecting him, and thereby reducing the pressure to communicate to him; and (c) by changing the group norm in the direction of the deviate. The latter should come about most readily when the issue is less clearly defined for other group members. Using this scheme, the following hypotheses were set up for test:

(1) The deviate will be rejected more in high cohesive groups (Hi Co) than he will be in low cohesive groups (Lo Co).

(2) As deviation in opinion becomes more apparent, communication to the deviate will rise, and then decline when he is rejected.

* This repeat study was financed and sponsored by the Laboratory for Research in Social Relations at the University of Minnesota. It was initiated by Stanley Schachter, who performed the initial study, and he cooperated throughout to insure technical comparability between the two. Acknowledgements are due also the Professor Don Martindale of the Department of Sociology for helpful insight throughout the replication.

[1] Stanley Schachter, "Deviation, Rejection and Communication," printed in Festinger, *et al., Theory and Experiment in Social Communication,* Ann Arbor: Research Center for Group Dynamics, 1950, pp. 51–81.

[2] Further details of either phase may be obtained from the initial report by Schachter cited above.

[3] *Ibid,* p. 52.

[4] A second major hypothesis, similarly derived, was set up for test in the initial study: "Pressures toward uniformity vary directly with the group relevance of the issue."

EXPERIMENTAL DESIGN

In the original study, students at the University of Michigan were given the chance to join two types of social club. *Case Study* clubs were formed with the ostensible purpose of reviewing the case history of juvenile delinquents, and recommending treatment to the authorities. *Editorial* clubs were to review articles prior to their publication and make recommendations to a magazine editor. Those students who expressed high interest in case study clubs and low interest in editorial clubs were included as subjects. These were divided at random and assigned to both groups, such that case study groups had interested members and editorial groups had members who felt little concern about the clubs purpose. Eight groups of each type were formed, and the initial meeting of each constituted an experimental session, after which the true purpose was explained and the group never met again.

Deviation from the group standard. A brief case history of a juvenile delinquent distributed at each meeting provided the basis for group discussion. The members were to recommend the best treatment for the boy described, case study clubs believing their suggestion would go to the juvenile authorities, and editorial clubs believing it would be considered by an editor in his write-up of the case.

A scaled list of alternative recommendations was provided, ranging from extreme love and affection at point #1, to extreme punishment at point #7. Opinion on the matter could be expressed unambiguously by stating a number from one to seven on this "love-punishment" scale. A poll of opinion was taken three times during 45 minutes of discussion, once at the start, in the middle and at the end.

There were three *trained participants* who took part in each meeting as group members. One conformed to group opinion (the *Mode*), one took position #7 and argued for it in discussion (the *Deviate*), and the third starting the meeting as a deviate and "allowed" discussion to influence him until he was at the modal position at the close of meeting (the *Slider*). Throughout the course of the experiment the three participants rotated roles, playing each role the same number of times in both Hi Co and Lo Co conditions.

Measuring pressures toward uniformity. Communication to the Deviate and rejection of the Deviate were taken as manifestations of such pressure. An observer, nominally acting as the temporary secretary of the club, recorded communications; who spoke, to whom he spoke, and for how long. At the end of the discussion period, three forms were filled out by each member, constituting two measures of rejection and one check upon the manipulation of cohesion.

The Replication. The above procedures were repeated in the replication in the most careful manner possible. Subjects, however, were drawn from a younger age group, high school students in the 10th, 11th and 12th grades. There were nine groups formed in each condition as compared with eight in the first study. Practice groups were conducted on the University of Minnesota campus in which the trained observer, Schachter, and the replicator, recorded communications simultaneously in an effort to check the reliability of observation. Between three observers there was 87 per cent correspondence in recording who spoke, and 79 per cent in recording to whom communications were addressed.

COMPARATIVE ANALYSIS OF RESULTS

Wherever possible the results of the replication are presented here along with corresponding data from the initial study. After comparisons have been made, additional data will be presented in attempting to account for certain discrepancies.

Table 1 presents a comparison of Hi Co and Lo Co in both studies on three questions designed to measure the cohesion of the groups. It is apparent in questions 1 and 2 that a substantially higher percentage of members in Hi Co were interested in the club in both studies. With the third question this holds true only in the initial study. It should be pointed out that only subjects answering "yes" to question 1 were instructed to answer question 3. It seems reasonable that in high school the boys would have more friends they would like to include than would students at a large university.

The Sociometric Measure of Rejection. Each group member was asked to rank other members in order of their desirability as club members. For any person a *rejection*

score could be computed as the mean rank received from other subjects. Table 2 presents the mean rejection score for Mode, Slider and Deviate in Hi Co and Lo Co groups. It was hypothesized that the Deviate would be rejected more in the Hi Co groups, as the table confirms for both studies. The difference between means for the Deviate is significant below the .01 level in the replication, and at the .12 level in the initial study. Differences for the other roles do not approach significance.[5] It is of interest to note here, that rejection was uniformly greater in the first study and we shall comment upon this below. Finally, it was observed that in most groups there were one or two subjects with higher rejection scores than the Deviate and these were invariably the members who contributed least to discussion. The Deviate, however, was forced to speak up more than any other single member, yet he was rejected.

Table 1. The Cohesiveness Questionnaire

Questions	Replication		Initial Study	
	Hi Co	Lo Co	Hi Co	Lo Co
	Percentages Responding:			
1. Do you want to remain a member of this group?	(N–59)	(N–55)	(N–53)	(N–50)
Yes	93	64	98	68
No	7	36	2	32
2. How often should the club meet?	(N–55)	(N–35)	(N–52)	(N–39)
Once or twice a week	70	48	61	54
Once or twice a month	30	52	39	46
3. Would you like to persuade others to join the club?	(N–55)	(N–35)	(N–52)	(N–34)
Yes	81	86	73	51
No	19	14	19	34

Table 2. Mean Sociometric Rejection Scores for Paid Participants

	(N)	Mode	Slider	Deviate
A. The Replication				
Hi Co Groups	(9)	4.31	4.79	6.15
Lo Co Groups	(9)	4.29	4.34	5.11
B. The Initial Experiment				
Hi Co Groups	(8)	4.65	5.02	6.44
Lo Co Groups	(8)	4.70	4.56	5.83

Rejection Reflected in Committee Assignments. Each group member nominated each of the other members to one of three committees. The executive committee was described as very interesting and very important work, the steering committee less so, and the correspondence committee as least interesting and important. Nomination to the latter was considered a form of rejection. Table 3 presents the percentages of all subjects assigning the trained participants to each committee, above or below the percentages expected by chance alone.

In both experiments the Deviate was nominated to the correspondence committee more than the Slider, who in turn was so nominated more than the Mode. While this trend remains unchanged in the replication, there is a noticeable difference with regard to chance expectations. All trained participants were nominated to higher committees in the replication, resulting in strong under-nomination of the Mode to the correspondence committee. While the Deviate was rejected in the initial study, by this measure, the Mode was over-accepted in the replication. This lower level of rejection in the replication is parallel to that observed in the first measure of rejection. There was no difference in rejection between Hi Co and Lo Co groups in the first study, by this measure. In the repeat study the observed difference is in the expected direction but not quite statistically significant.

[5] All significance tests employed in this section were "t" tests with 16 degrees of freedom in the replication, and 14 degrees in the initial study.

The Process of Communication. It was hypothesized that communication to the Deviate would rise and then fall off as the Deviate is rejected. Such declining communication should be found for strong rejectors sooner than for other members, and it should be found in Hi Co groups more than in Lo Co groups.

Table 3. Percentages of Subjects Above or Below Chance Assigning Paid Participants to Committee Roles

Condition and Committees	Mode	Slider	Deviate
A. The Replication			
Hi Co Groups			
Executive committee	9.04	−5.75	−2.83
Steering committee	8.45	10.91	3.37
Correspondence committee	−17.49*	−5.16	−0.54
Lo Co Groups			
Executive committee	7.98	0.70	6.16
Steering committee	9.33	9.33	2.05
Correspondence committee	−17.29*	−10.02	−8.21
B. The Initial Study			
Hi Co Groups			
Executive committee	−4.56	1.76	−14.00
Steering committee	6.76	−5.93	−3.34
Correspondence committee	−2.22	4.16	22.31*
Lo Co Groups			
Executive committee	−9.83	7.32	−17.58
Steering committee	20.15*	−7.89	−7.81
Correspondence committee	−10.44	0.50	25.26*

* Significance below the .01 level, from standard error of percentages. Standard error was computed separately for each participant role in each condition, and ranged close to 6.20 in both studies.

Subjects were classified as strong, mild and non-rejectors on the basis of the rank they assigned to the Deviate in the sociometric measure. The mean number of communications addressed to the Deviate by subjects in each class are presented in Table 4 by time intervals of ten minutes.[6] It may be seen that communication accelerated in both studies, presumably as the Deviate's position became increasingly clear. The hypothesized decline in communication from strong rejectors was found in Hi Co groups in the initial study, along with a later decline for mild rejectors. This decline was significant at the .01 level.[7]

Table 4. Mean Communications to the Deviate in Ten Minute Periods

	(N)	Time Periods 5″–15″	15″–25″	25″–35″	35″–45″
A. The Replication					
Hi Co Groups					
Non-rejectors	13	0.38	0.62	1.15	1.54
Mild rejectors	28	1.03	1.68	2.32	2.78
Strong rejectors	18	0.94	1.94	2.67	3.33
Total mean		0.86	1.47	2.17	2.67
Lo Co Groups					
Non-rejectors	18	0.94	2.61	3.53	3.61
Mild rejectors	28	2.11	2.18	4.61	4.64
Strong rejectors	9	1.00	2.66	2.88	2.44
Total mean		1.55	2.39	3.98	3.94
B. Initial Experiment					
Hi Co Groups					
Non-rejectors	13	1.15	0.92	2.15	1.54
Mild rejectors	15	0.40	1.27	1.87	0.86
Strong rejectors	25	0.68	1.60	1.52	0.76
Total mean		0.72	1.34	1.77	0.98
Lo Co Groups					
Non-rejectors	13	0.38	0.54	0.34	0.46
Mild rejectors	22	0.58	0.50	1.23	1.73
Strong rejectors	15	0.26	0.47	1.27	2.99
Total mean		0.48	0.50	1.14	1.77

In the replication, however, communication continued to climb until the very end, with the exception of an insignificant decline for strong rejectors in the Lo Co groups. Strong rejectors failed to reduce their communication in Hi Co as was expected, and even more strange, the total volume of communication to the Deviate was higher in Lo Co than in Hi Co. Similarly, the total volume was higher in the repeat study than in the initial experiment. It is suggested that these data may highlight the shortcomings of "number of communications" as an index

[6] The first five minutes of discussion were omitted because of the many irrelevant comments.

[7] The sign test of significance was employed in this section.

where length of communications is clearly relevant. Since number is in part a function of length it may be that college students made generally longer speeches, and that high school students made longer speeches in Hi Co than they did in Lo Co. Table 5 presents the percentages of all communications which were 30 seconds or over, supporting this inference.

TABLE 5. PER CENT LONG COMMUNICATIONS (30 SECONDS OR MORE)

	Per Cent
A. Replication	
Hi Co Groups	14
Lo Co Groups	9
B. Initial Experiment	
Hi Co Groups	28
Lo Co Groups	33

AN INTERPRETATION OF DISCREPANCIES

In any replication, observed discrepancies take on central importance. While both experiments show a positive relation between *cohesiveness* and *pressures toward uniformity* as measured on the sociometric scale, three differences emerge relative to this major hypothesis: (a) rejection was lower in the replication as seen in the sociometric rejection scores; (b) rejection as measured in committee assignments was lower in the replication; and (c) a decline in communication to the Deviate did not materialize in the replication, again indicating lower rejection by this theory.

In a replication designed, as this one was, to test the same hypothesis in a different empirical universe, one source of such discrepancies should be sought in distinguishing features of the two empirical settings. We shall accordingly raise the following question: Given the theory initially advanced, is it possible to predict the observed differences between the two studies on the basis of the difference in age between the two groups sampled? If we tentatively assume that high school students have opinions about proper treatment for juvenile delinquents which are *less structured* and more ambiguous than similar attitudes held by college students who presumably have a broader experiential background, we can make the following predictions:

(1) High school subjects will change their opinion more readily than college subjects. The group norm will tend more to shift in the direction of the deviate position (see page 3 above).

(2) Given the above, there should be less perceived deviation and hence less rejection.

A test of (1) above is clearly in order.

Table 6 presents the number of persons who changed their opinion during the discussion period. In both studies this occurred more frequently in Hi Co than in Lo Co, as would be expected, but the difference is not significant. Comparing the totals for the two studies, however, we find that a significantly higher proportion of subjects changed in the replication. The probability is below .01 by chi-square. The directing of such attitude change is reflected in the changing position of the group norm. Table 7 presents the mean attitude score on the seven point scale at the start of discussion, in the middle and at the end (T_1, T_2, T_3). As would be expected, in both studies the greatest amount of change in the direction of the Deviate (T_3-T_1) is found in Hi Co groups, again not significant. Comparing the total change for the two studies we find greater change in the replication, significant below the .01 level by "t" test with 32 degrees of freedom.

TABLE 6. ATTITUDE CHANGES DURING GROUP DISCUSSION

Experiment and Condition	(N)	Persons Changing	Mean Distance of Change*
A. Replication			
Hi Co Groups	59	35	1.60
Lo Co Groups	55	27	1.18
Total	114	62	1.40
B. Initial Experiment			
Hi Co Groups	53	17	1.35
Lo Co Groups	50	11	1.18
Total	103	28	1.27

* Distance was measured on the 7 point love-punishment scale.

These data lend some support to the interpretation that the younger boys had less structured opinions on the matter discussed, or were for some other reason more readily

influenced in their opinions. Pressures toward uniformity took the direction of changing self more than they did among older subjects. This hypothesized difference between the two age groups is further supported in the experiments by Solomon Asch, where boys of similar age to those in this replication were found more susceptible to social influence than were subjects of college age.[8]

TABLE 7. MEAN POSITION OF SUBJECTS ON THE 7 POINT SCALE AT EACH POLL

	(N)	Polls T_1	T_2	T_3	(T_3-T_1)
A. Replication					
Hi Co Groups	9	3.13	3.81	3.86	0.73
Lo Co Groups	9	3.01	3.38	3.54	0.53
Total	18	3.07	3.54	3.70	0.63
B. Initial Experiment					
Hi Co Groups	8	2.80	3.01	3.06	0.26
Lo Co Groups	8	3.09	3.23	3.14	0.05
Total	16	2.95	3.12	3.10	0.15

There remains at least one alternative, or perhaps complementary, explanation for the observed difference in amount of measured rejection. Rejection scores for subjects were closely correlated with amount of verbal participation. If high school subjects remained quiet in greater numbers, there would be more subjects nominated to low committees and ranked low in the sociometric rejection measure, forcing the trained participants into higher positions. Hence, even though the participants were trained to participate the same amount as they had in the initial study, they may have participated *relatively* higher in the replication, depending upon subject participation.

[8] Solomon Asch, *Social Psychology*, New York: Prentice-Hall, Inc., 1952, Table IX, p. 482.

SUMMARY AND CONCLUSION

A replication may serve the necessary function of re-examining propositions under different conditions before they are incorporated into the body of expanding theory. The central proposition tested by Schachter, that pressures toward uniformity in social groups vary directly with group cohesion, was substantiated in the replication within comparable levels of significance. Discrepancies in the over-all amount of rejection between the two studies formed a pattern which could be largely accounted for within the theory initially advanced.

The replication seems to indicate two things: first, the laboratory techniques employed by group dynamicists in studying properties of small groups are replicatable, at least in some instances; and second, the substantive findings were in this case found to be stable. There is, however, one major ambiguity involved. Can the subjects involved in such laboratory studies legitimately be considered social groups, and to what extent can findings be generalized to field situations? It seems quite clear that such laboratory findings will have greatest value when used in conjunction with parallel field studies.

A STUDY OF GROUP ACTION *

DAVID G. HAYS AND ROBERT R. BUSH
Harvard University

THE behavior of individual subjects in highly controlled and restricted stimulus situations has been studied extensively, both empirically and theoretically, by experimental psychologists. The behavior of *groups* of subjects has also been studied, with at least two differing theoretical orientations. Social psychologists have examined the influence of the group on the individual, considering the group as a part of his stimulus situation.[1] Sociologists as well as

* The first named author participated in this research while holding a Social Science Research Council Research-Training Fellowship. The study was supported in part by the Laboratory of Social Relations, Harvard University.

[1] An early and original experiment was that of N. Tripplett, on "Dynamogenic Factors in Pace-Making and Competition," published in the *American Journal of Psychology*, 9 (1897), pp. 507–532.

social psychologists have been concerned with the *interaction* among the participants in the group.[2] These theoretical orientations have led to correspondingly different experimental tasks. Group influence has been studied most often by assigning a task to each participant as an individual, the task to be performed in the presence of the other group members. Interaction, on the other hand, has been studied by assigning a task to the group as a unit, and asking the participants to contribute to its solution. While the first type of study may involve a task which is, like that of the learning psychologist, controlled and restricted, interaction studies have generally utilized tasks of a less restricted nature.

In areas where precise experiments have been done, the feasibility of constructing mathematical models has been demonstrated.[3] In the study of interaction, however, comparatively few applications of models have been reported.[4] Perhaps one reason for this lack is the complexity of the experimental situations used in such studies. We believe that the type of task used may be crucial, particularly in the early stages of model construction. A possible solution to this problem might be attained by adapting tasks used by experimental psychologists to the study of interaction.

Our rationale for this stratagem depends largely on two points. One concerns the categorization of the alternative courses of action available to the subject during the experiment. For purposes of model construction, it is expedient that the number of alternatives be small. In general, the experimental psychologist has dealt with situations in which only two or three alternatives were available, whereas the sociologist, dealing with free interaction, has worked with many more categories of behavior. Furthermore, the experimental psychologist has restricted himself to situations in which the alternatives could be operationally defined, while the sociologist has depended on the inferences of an observer. Our second point is that the construction of a model is simplified if there is a time series of environmental events corresponding to the time series of interaction behavior. The experimental psychologist uses tasks of this type, while the sociologist has been more interested in tasks involving only one environmental event. For example, Bales introduces a human relations problem; interaction then proceeds in the group for forty minutes before the next environmental event.

If we can successfully adapt the tasks used by experimental psychologists to the study of interaction, two results should obtain. First, since the behavior of individual subjects in such situations is well known, we should have a base line for our expectations about the behavior of individual participants in the groups. Furthermore, since mathematical models for the behavior of individual subjects exist, generalization of these models should yield models for the behavior of groups taken as acting units; the form of these models may suggest the form of models for interaction in such situations.

In this paper we report on two tentative models for *group action* and an experiment designed to test their predictions. We suggest possible lines for the development of interaction models. Our experimental results may hold some interest in themselves, but are offered primarily as evidence of the

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Floyd H. Allport introduced the term *social facilitation* in his *Social Psychology,* Boston: Houghton Mifflin, 1924, pp. 260–291. A more recent study is "Group Influences upon the Formation of Norms and Attitudes," by Muzafer Sherif, in Theodore M. Newcomb and Eugene L. Hartley, *Readings in Social Psychology,* New York: Henry Holt, 1947, pp. 77–90.

[2] E. g., Talcott Parsons, Robert F. Bales, and Edward A. Shils, *Working Papers in the Theory of Action,* Glencoe, Ill.: The Free Press, 1953; and also, Leon Festinger, Kurt Back, Stanley Schachter, Harold H. Kelley, and John Thibaut, *Theory and Experiment in Social Communication,* Ann Arbor, Michigan: Research Center of Group Dynamics, Institute for Social Research, University of Michigan, 1950.

[3] For example, by William K. Estes and Cletus J. Burke, in "A Theory of Stimulus Variability in Learning," *Psychological Review,* 60 (1952), pp. 276–286. We draw directly on the results of Robert R. Bush and Frederick Mosteller, "A Stochastic Model with Applications to Learning," *Annals of Mathematical Statistics,* 24 (1953), pp. 559–585.

[4] One model for small group behavior is presented by Herbert A. Simon, "A Formal Theory of Interaction in Social Groups," *American Sociological Review,* 17 (1952), pp. 202–211. Another model is proposed by Bales (Parsons, Bales, and Shils, *op. cit.*).

utility of the research technique which we propose.

We have selected the two-choice situation studied by Humphreys and others[5] as our starting point.[6] The typical two-choice learning experiment is as follows. A subject is presented periodically with a signal stimulus, such as a buzzer or a light. After each signal, one of two *events* occurs. For example, a row of lights may flash horizontally or vertically, or an experimenter may say one of two words. Call one event E_1, the other E_2. Then a trial consists of a signal followed by one or the other of two events. The events occur randomly each with a probability which is the same on every trial. The subject is asked to predict, each time the signal occurs, what the event will be. He thus has two *alternatives*, and if he predicts E_1, we say that his choice is A_1, or if he predicts E_2, his choice is A_2.

Many experiments, with somewhat varying conditions, have yielded similar results. In three cases,[7] the probability of E_1 has been set at 0.75; each time, subjects eventually tend to choose A_1 on 75 per cent of the trials. In general, it has been found that the probability of event E_1 corresponds to the eventual tendency to choose alternative A_1. This result has been reproduced many times in spite of the fact that a subject would have the greatest expected number of successes by choosing the more frequent event 100 per cent of the time.

[5] The original paper is L. G. Humphreys, "Acquisition and Extinction of Verbal Expectations in a Situation Analogous to Conditioning," *Journal of Experimental Psychology*, 25 (1939), pp. 294–301. Other experiments which are particularly relevant to our study are reported by D. A. Grant, H. W. Hake, and J. P. Hornseth, "Acquisition and Extinction of a Verbal Conditioned Response with Differing Percentages of Reinforcement," *Journal of Experimental Psychology*, 42 (1951), pp. 1–5; H. W. Hake and Ray Hyman, "Perception of the Statistical Structure of a Random Series of Binary Symbols," *Journal of Experimental Psychology*, 45 (1953), pp. 64–74; and M. E. Jarvik, "Probability Learning and a Negative Recency Effect in the Serial Anticipation of Alternative Symbols," *Journal of Experimental Psychology*, 41 (1951), pp. 291–297.

[6] Such an experiment was suggested by W. K. Estes.

[7] The experiments listed above (footnote 5) by Grant, Hake, and Hornseth, by Hake and Hyman, and by Jarvik.

Now consider combinations of three guesses. The experimenter might combine the guesses of three isolated subjects, all confronted with the same sequence of events. The guesses of each isolated subject would be expected to conform to the results just described. The experimenter, combining guesses as votes, and making "group decisions" on a two-out-of-three basis, would find that the groups eventually tend to choose A_1 more often than do individuals. Thus, if individuals choose A_1 on 75 per cent of trials, we show below that groups will choose A_1 about 84 per cent of the time.

If the three subjects are brought together, however, and allowed to interact freely during the time they are making their guesses, their behavior may in some way be modified. The *voting model* described below assumes no basic change; it embodies the assumption that the three men are still behaving as if they were independent voters. The *group-actor model* assumes that the group acts as if its guesses were those of an individual; that is, individuals and groups are taken to be entirely interchangeable actors in this environmental situation. In our discussion below we consider the qualities which must be attributed to interaction, if one of these models adequately describes group action.

THE GROUP-ACTOR MODEL

If the group is considered to be a single actor which chooses between two alternatives on each trial, the model with fixed event probabilities described by Bush and Mosteller[8] can be used without modification. Let p_n be the probability that alternative A_1 will be chosen on trial n and $q_n=1-p_n$ be the probability that A_2 is chosen, where $n=0, 1, 2, \cdots$. Following Bush and Mosteller we assume that when event E_2 occurs on trial n it decreases the probability of choosing A_1 on trial $n+1$ by a constant percentage, i.e.,

$$(1) \quad p_{n+1}=\alpha p_n \quad \text{(when } E_2 \text{ occurs on trial n)},$$

where α satisfies the condition $0<\alpha<1$. This assumption implies that if event E_2 occurs all the time, the probability of choosing A_1 tends to zero. Similarly we assume

[8] Bush and Mosteller, *op. cit.*

that when event E_1 occurs on trial n, the probability q_n of A_2 being chosen changes to q_{n+1} as follows:

(2) $q_{n+1}=\alpha q_n$ (when E_1 occurs on trial n).

The same parameter α enters both equations because we believe that the two events have equal but opposite effects.

The experimenter decides in advance to present event E_1 on a fixed proportion, π, of the trials and event E_2 on $1-\pi$ of the trials. The value of p_n depends upon the precise sequence of events prior to trial n. Therefore, a population of groups having experienced different sequences (but all with probability π of E_1 on each trial) will produce a *distribution* of values of p_n on each trial n. Bush and Mosteller computed the moments of these distributions. The kth raw moment $V_{k,n}$ on trial n is given by a recurrence formula [9] which for the present model becomes

$$(3)\qquad V_{k,n+1}=\pi\sum_{i=0}^{k}\binom{k}{i}(1-\alpha)^{k-i}\alpha^i V_{i,n}+(1-\pi)\alpha^k V_{k,n},$$

where $V_{0,n}=1$.

We are interested in the asymptotic behavior of the groups—the performance when "learning" is complete. The moments of the asymptotic distribution can be obtained from the preceding equation by setting $V_{k,n+1}=V_{k,n}=V_k$. The result is

$$(4)\qquad V_k=\frac{\pi}{1-\alpha^k}\sum_{i=0}^{k-1}\binom{k}{i}(1-\alpha)^{k-i}\alpha^i V_i.$$

When k=1, we get the following formula for the asymptotic mean:

$$(5)\qquad V_1=\pi.$$

This result, when the model is applied to an individual's behavior, agrees with the data, mentioned in the introduction of this paper, obtained in all the Humphreys-type experiments with individual subjects.

In order to compare observed proportions of A_1 choices obtained from a sample of groups with theoretical proportions, we need to know about the variance of the sample mean. If a particular group has probability p_n of choosing A_1 on trial n, the binomial variance is simply $p_n(1-p_n)$. The expected value of this binomial variance over the distribution of values of p_n is $V_{1,n}-V_{2,n}$; asymptotically it is V_1-V_2 where V_1 and V_2 are given by equation (4). If K groups are used to estimate V_1 on a particular trial late in the experiment, the expected variance of this estimate V_1 turns out to be

$$(6)\qquad \sigma^2(\hat{V}_1)=\frac{V_1-V_2}{K}=\frac{\pi(1-\pi)}{K}\,\frac{2\alpha}{1+\alpha}.$$

In actual practice one uses many trials to estimate V_1; in the analysis of the data presented below, the last 50 trials are used. These individual trial estimates are not independent, but a lower bound on the variance of an estimate obtained from N trials and K groups is given by

$$(7)\qquad \sigma^2(\hat{V}_1)\geq\frac{\pi(1-\pi)}{NK}\,\frac{2\alpha}{1+\alpha}.$$

When α is very near unity, all groups will have a probability of choosing A_1 which is very near π on every trial in the latter part of the experiment. In this case, the variance of $\hat{V}_1$ is nearly equal to the binomial variance for NK observations:

$$(8)\qquad \sigma^2(\hat{V}_1)\cong\frac{\pi(1-\pi)}{NK}.$$

We use this result in testing the hypothesis that $V_1=\pi$ for the data described below.

We are interested in estimating the parameter α from data for two reasons. First, we need its value in computing higher moments and in deciding whether or not approximation (8) is valid. Second, we wish to compute a predicted curve of the proportion of A_1 choices versus trials from the beginning of the experiment. For this latter purpose, we also wish to estimate p_0, the initial probability of choosing A_1. A simple estimation technique used by Bush and Mosteller [10] can be developed as follows.

Equation (3) may be solved to give an explicit formula for the means $V_{1,n}$. The result is

$$(9)\qquad V_{1,n}=\pi-(\pi-p_0)\alpha^n.$$

When this expression is summed from trial 0 to trial r−1, we have

[9] Bush and Mosteller, *op. cit.*, equation (13).

[10] Bush and Mosteller, *op. cit.*

$$(10) \qquad S_r = \sum_{n=0}^{r-1} V_{1,n} = r\pi - (\pi - p_0)\frac{1-\alpha^r}{1-\alpha}.$$

This quantity is estimated by the sum of the A_1 proportions over the first r trials. A similar expression is obtained for the sum S_s for the first s trials. When these are combined to eliminate p_0 we have

$$(11) \qquad \frac{1-\alpha^r}{1-\alpha^s} = \frac{r\pi - S_r}{s\pi - S_s}.$$

This equation may be solved numerically for an estimate of α when S_r and S_s are replaced by their estimates. (The numbers r and s should be chosen so that the left side of (11) is not too insensitive to the value of α.)

An estimate of the initial probability p_0 can be obtained from equation (10), once α has been estimated. Solving for p_0 we have

$$(12) \qquad p_0 = \pi - (r\pi - S_r)\frac{1-\alpha}{1-\alpha^r}.$$

These estimation equations are used in analyzing data from the experiment described below.

THE VOTING MODEL

An alternative model for the experimental problem described in the introduction can be developed by assuming that each group member makes an independent guess and that the group decision is made by majority rule. Assume that *each man* makes choices according to the model described in the preceding section and that all have the same values of α and p_0. On trial n all men in the group have the same probability p_n of choosing A_1 because they have all observed the same sequence of events. In a three-man group, if three or two men choose A_1, then the group chooses A_1. The probability that this will happen is $p_n^3 + 3p_n^2(1-p_n)$. (There are three possible pairs of A_1 choices.) For a population of groups we need the expected value of this expression over the distribution of values of p_n. This expectation is $V_{3,n} + 3V_{2,n} - 3V_{3,n}$. We denote it by P_n and have

$$(13) \qquad P_n = 3V_{2,n} - 2V_{3,n}.$$

To obtain an explicit formula for P_n, we need expressions for $V_{2,n}$ and $V_{3,n}$ in terms of α, π, and n. Such expressions can be obtained by solving recurrence formula (3) for k=2 and 3. The result is

$$(14) \qquad P_n = P + C_1\alpha^n + C_2\alpha^{2n} + C_3\alpha^{3n},$$

where the asymptotic value is

$$(15) \qquad P = \beta[1 - 2\pi\alpha^2(1-\alpha)/(1-\alpha^3)] - \gamma$$

and the coefficients are

$$(16) \quad \begin{aligned} C_1 &= 2(\pi - p_0)(\beta - 3\pi) \\ C_2 &= (1-2\pi)[3p_0^2 + 6\pi(\pi - p_0) - \beta] \\ C_3 &= 6\pi[p_0^2 + 2\pi(\pi - p_0)] - 2p_0^3 \\ &\quad - 2\beta[(2\pi - p_0) - \pi\alpha^2(1-\alpha)/(1-\alpha^3)] + \gamma \\ \beta &= 3\pi[(1-\alpha) + 2\alpha\pi](1-\alpha)/(1-\alpha^2) \\ \gamma &= 2\pi[(1-\alpha) + 3\alpha\pi](1-\alpha)^2/(1-\alpha^3). \end{aligned}$$

It has been assumed that $V_{k,0} = p_0^k$ and this implies that all members of all groups have the same initial probability p_0 of predicting event E_1. The asymptotic proportion P is always greater than π for $0 < \alpha < 1$. When $\alpha = 0$ it is readily shown that $P = \pi$, whereas when $\alpha = 1$, it can be shown that $P = 3\pi^2 - 2\pi^3$. When $\pi = 0.75$, for example, this limit is 0.84375. Hence if the voting model is correct and α is near unity, the asymptotic proportion of group choices of A_1 is considerably above the asymptote of π predicted by the group-actor model.

When data are analyzed using the voting model, the parameters α and p_0 must be estimated. In our analysis we estimate p_0 by first estimating $P_0 = 3p_0^2 - 2p_0^3$ from the data of the first few trials. The parameter α can then be estimated by a procedure similar to that discussed in the preceding section. We sum P_n of equation (14) over trials from 0 to r—1:

$$(17) \qquad \sum_{n=0}^{r-1} P_n = rP + C_1\frac{1-\alpha^r}{1-\alpha} + C_2\frac{1-\alpha^{2r}}{1-\alpha^2} + C_3\frac{1-\alpha^{3r}}{1-\alpha^3}.$$

The right side of this equation is a function of the unknown parameter α and the known quantities r, π, and p_0. The left side is estimated by the sum of the A_1 proportions over the r trials. Hence, a numerical solution leads to an estimate of α. Once p_0 and α have been estimated, the theoretical values of P_n can be computed from equations (14), (15), and (16).

EXPERIMENTAL PROCEDURES

The apparatus consisted of a board on which were mounted two ten-watt lights, one

red and one blue, which were controlled by push buttons. The blue light served as a signal; the red light either was or was not turned on following the signal.[11]

Three subjects were seated on one side of a table, facing a one-way mirror.[12] In the center of the table—just out of reach of all subjects—were placed a pencil and two spiral notebooks, numbered 1 and 2. There were a loudspeaker and microphone in the room.

After pointing out the observation equipment the experimenter announced that instructions were recorded on tape, and would be heard over the speaker. He left the room at this point. A portion of the recorded instructions follows: [13]

"This is an experiment on prediction. When the blue light comes on, it serves as a signal for you to predict whether the red light will or will not come on immediately following. You are to guess whether or not the red light will go on. Your object is to try to guess correctly as many times as you can. Now here is what you are to do. You will take the spiral notebook marked '1' and turn to the first page. You will hear the words, 'This is trial number . . .' for example, 'This is trial number 1.' You will write the number you hear on a page of the notebook. At the same time, the blue light will go on. Below the trial number, write down your guess. You should write the word 'yes' if you think the red light is going to come on, or the word 'no' if you think it will not. When the blue light goes off, you can check your guess, then you must turn to the next page of the notebook, and not look back." The groups were instructed to make one and only one guess on each trial, and they were allowed to talk. No instructions about group organization or decision-making were given.

Two practice trials were run, the red light being turned on the first time, not the second. The correct guess was announced in advance each time. After a two minute pause, the tape carried trial numbers, 20 seconds apart. When the experimenter heard a trial number, he turned on the blue light signal for five seconds, then, according to a random schedule which was different for each group, he turned the red light on 75 times in 100 trials.

The subjects were Harvard undergraduates, mostly freshmen. Twenty-one groups were run. One was eliminated because it was discovered that one subject had had previous experience with similar experiments. Sound recordings of all groups were retained.

RESULTS

The observer noted that, in general, groups used the two minute period after the practice trials to arrange a decision-making procedure. Most groups agreed on a voting procedure with majority rule. In a few cases, this procedure was set aside for part of the experiment, and in two cases the experimenter entered after the 60th trial to ask that "all take part in each decision from now on." Inasmuch as these modifications of the general procedure adopted by the subjects were rare, and because the models examined make no assumptions about form of interaction, the data from these groups were not discarded.

We now briefly describe the data obtained; then we analyze the data, first as if the group-actor model were true, then as if the voting model were true.

The raw data yielded by the experiment are of course the predictions, either *yes* or *no*, of twenty groups on one hundred trials. We computed the proportion of guesses *yes* (choices of A_1) on each trial, obtaining 100 *trial* proportions. We also obtained these proportions for *blocks of ten trials;* the results are shown below:

Trials	Proportion
0–9	0.460
10–19	0.590
20–29	0.620
30–39	0.655
40–49	0.685
50–59	0.725
60–69	0.705
70–79	0.690
80–89	0.765
90–99	0.770

[11] This procedure is very similar to that of Humphreys, *op. cit.*

[12] We are indebted to R. F. Bales for the use of his small group observation facilities in the Laboratory of Social Relations.

[13] These instructions are very similar to those used by Edith D. Neimark, "Effects of Type of Non-reinforcement and Number of Alternative Responses in Two Verbal Conditioning Situations," unpublished thesis, Indiana University, 1953.

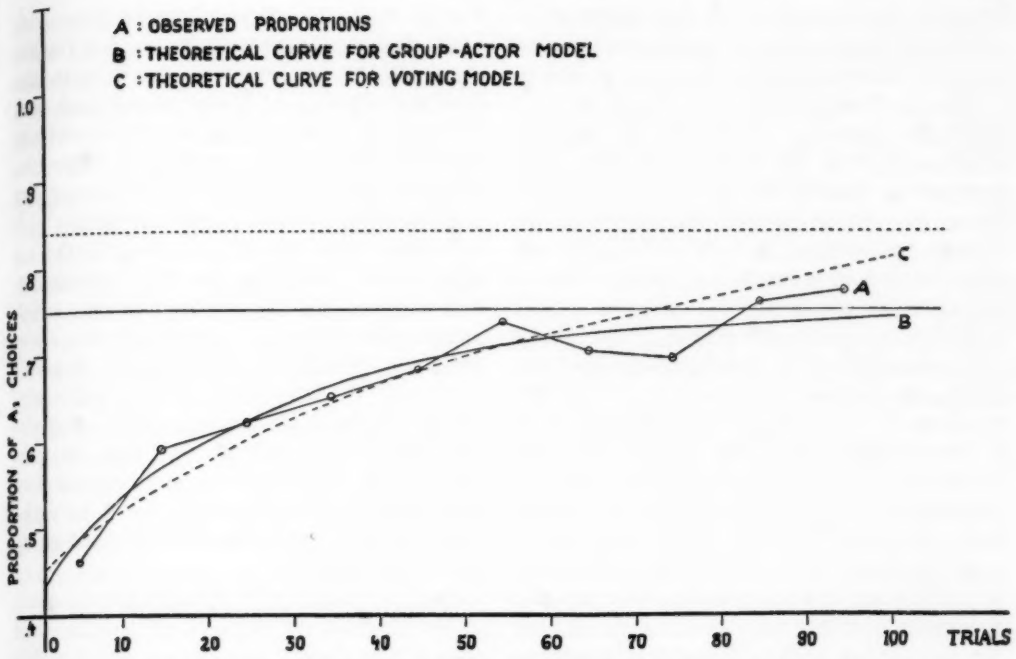

FIGURE 1. Comparison of experimental results with the two models. The small circles show the proportions of A_1 choices by twenty groups in ten-trial blocks. The solid curve shows the expected proportion of A_1 choices computed from the group-actor model with $p_0=0.434$ and $\alpha=0.963$; the solid horizontal line shows the asymptotic proportion of A_1 choices (0.75) expected with this model. The broken curve and horizontal line (at 0.841) show the same proportions computed from the voting model with $p_0=0.47$ and $\alpha=0.982$.

These proportions are plotted in the figure. The proportion of A_1 choices during the last 50 trials is 0.731. Thus, if the groups have approached an asymptote, it is closer to that predicted by the group-actor model, 0.75; whereas, if the voting model is to be accepted, it must be assumed that the groups do not reach asymptote in 100 trials.

Now, assuming that the group-actor model is true, we use equations (11) and (12) to estimate α and p_0. We choose $r=100$, $s=30$, and find that the empirical ratio in equation (11) is 1.44. The estimate of α is then 0.963; with this value of α, the left side of equation (11) is 1.39. The estimate of p_0 from equation (12) is 0.434. Using these estimates in equation (9), we compute the curve of $V_{1,n}$ versus n. This curve is shown in the figure.

One measure of goodness-of-fit is supplied by a *run* test.[14] To carry it out, we compute $V_{1,n}$ for each trial, and compare it with the corresponding observed proportion of choices of A_1. When the observed proportion is greater than the mean predicted by the group-actor model, we write down a plus, otherwise we write a minus. We find that there are 54 pluses and 46 minuses. The run test examines the number of unbroken series of plus or minus symbols in the mixed series of 100 symbols. We find that there are 53 runs. The expected number of runs is 50.68, and the standard deviation of the distribution of numbers of runs is 4.94. Thus we obtain a normal deviate of 0.47, which does not allow us to reject the group-actor model. It may be noted that a sign test would similarly not allow us to reject the model, since the total number of pluses, 54, is very close to the expected number, 50.

The variance, as we noted in Section 2, poses a considerable mathematical problem. Approximating the asymptotic variance by the lower bound formula (equation (7)), we find that the standard deviation of ten-trial proportions of choices of A_1 is $\sigma=0.035$. All the points representing observed propor-

[14] See Alexander M. Mood, *Introduction to the Theory of Statistics*, New York: McGraw-Hill, 1950, p. 393.

tions in the last 50 trials lie within $\pm 2\sigma$ of the group-actor curve. Again, we have no evidence for rejecting the group-actor model.

Finally, the standard deviation of the proportion of choices of A_1 on the last 50 trials is 0.0137, using equation (8). The proportion observed was 0.731. If the groups are at asymptote during these 50 trials, the expected proportion is 0.750. The difference is equal to 1.39σ. Again, we have no reason to reject this model.

We turn now to the voting model. Using the proportion of A_1 choices on the first ten trials, we estimate that $p_0=0.47$. We use equation (17) to estimate α, which is here a learning parameter applicable to each group participant separately. The sum of proportions of group choices of A_1, taken over all trials, is 66.65. This leads to an estimate of $\alpha=0.982$. With these parameters, and equations (14), (15), (16), we compute the curve of mean proportion of A_1 choices for the voting model. This curve is shown in the figure. Note that the fit is apparently about as good as the fit of the group-actor model. But the voting model curve is still rising, after 100 trials. The asymptote predicted, from equation (15), is 0.841.

Applying the goodness-of-fit test used above, we find 52 pluses and 48 minuses in 49 runs. The expected number of runs is 50.92, the standard deviation of number of runs, 4.97. Thus the normal deviate is 0.39. This result does not allow us to reject the voting model. The additional tests mentioned in connection with the group-actor model depend on the assumption that the groups have reached an asymptotic level of A_1 choices. Since this assumption is not warranted if the voting model is appropriate, the tests cannot be carried out.

DISCUSSION

We consider this study the first in a program directed toward the development of stochastic models for interaction. Our primary intent was to demonstrate the adaptability of tasks used heretofore by experimental psychologists to studies of interacting groups. Furthermore, while we had a baseline knowledge of the behavior of isolated individual subjects with Humphreys-type tasks, we felt it necessary to have in addition a similar knowledge of group decisions with the same task. Further work must deal explicitly with interaction, rather than with its consequences; we wish to discuss the experimental procedures used here in terms of their future usefulness and the need for modification, and to see how the group-action models described here suggest possible forms of interaction models.

In this experiment, we restricted the responses of the group to its environment, and we were able to construct models which adequately describe those responses. However, we allowed free interaction; it seems clear that the construction of a first model for interaction will require restriction of the responses of individuals. In further pretesting, we have not allowed conversation, and have permitted each subject to make only one guess on each trial by holding up a suitable card.

Our instructions were intended to leave to the subjects as much of the analysis and evaluation of the situation as possible. We note, however, that different evaluations lead to different forms of interaction; it seems that, in the future, a more complete evaluation of the situation should be included in the instructions, in order to elicit, in all subjects, uniform evaluations. We believe that different evaluations, in short, will lead to patterns of interaction requiring different models. A study of the typical evaluations of a population of subjects is a suitable topic for research much later in the program, after several models, and the evaluations to which they correspond, are well known.

Our task is now to find a model for the behavior of individuals in this environmental situation which yields the results we now have for *group* action. We can begin by comparing the group-actor and voting models. We estimated α, the learning rate parameter, as 0.963 if the group-actor model is appropriate, and as 0.982 if the voting model is appropriate. We have also estimated this parameter from the data of three experimenters who worked with individual subjects,[15] and find that it is contained in each case in the interval 0.95–0.97. Thus the group-actor model suggests that the learning rate of an individual is not changed when he enters a group, but the contrary

[15] The three mentioned in footnote 7.

is suggested by the voting model. On the other hand, the voting model assumes that each individual approaches the same asymptote of A_1 choices as if he were in isolation, and that his guesses are independent on each trial of the guesses of the other group members. The group-actor model assumes that the group goes to the same asymptote as an isolated individual, which could be interpreted as the result either of a lowered asymptote for the individuals (if their guesses are independent) or of a positive correlation among the guesses of the several participants, or both.

Now, this positive correlation among the guesses could well be termed *support;* the reduced group asymptote would then represent the cost of maintaining integration, which Parsons, Bales, and Shils have noted as a general problem of interaction systems.

We can incorporate this single feature of interaction into a model by assuming that at the start of each trial, each man has a p value determined by the events on previous trials, according to the learning model. The first man to venture a guess chooses A_1 with probability p. The second man then chooses A_1 with a probability which depends upon the first man's choice. If man 1 chose A_1, it is p*, where $q^*=1-p^*$ is given by

$$q^*=\beta q \quad (A_1 \text{ by man 1}), \tag{18}$$

while if man 1 chose A_2, p* is given by

$$p^*=\beta p \quad (A_2 \text{ by man 1}). \tag{19}$$

The parameter β thus varies with the tendency of the second man to support the first. If $\beta=1$, man 2 is independent of man 1, whereas if $\beta=0$, man 2 always supports man 1.

We assume that man 3 is similarly influenced, but by the choice of man 2 as well as that of man 1. We will not write down all the possible values of p* for man 3. It turns out that the expectation of P, the asymptotic probability that the group will choose A_1, taken over the p-value distribution, is

$$E(P)=\beta^3(3V_2-2V_3)+(1-\beta^3)V_1, \tag{20}$$

where V_1, V_2, and V_3 are the first, second, and third raw moments of the asymptotic p-value distribution.

The last equation shows us how to subsume the group-actor and voting models as special and extreme cases of this variable support model. E(P), by equation (20), is a weighted mean of V_1, the value obtained from the group-actor model, and $(3V_2-2V_3)$, the value obtained from the voting model. When $\beta=0$, we have the group-actor model; support is perfect, and the group acts as one man. When $\beta=1$, we have the voting model; there is no support, and the men in the group are fully independent. Consider a numerical example. Let $V_1=0.75$ and $(3V_2-2V_3)=0.83$. Then E(P) varies with β in the following manner:

$\beta=0.0$, $E(P)=0.75$;
$\beta=0.5$, $E(P)=0.76$;
$\beta=1.0$, $E(P)=0.83$.

Thus the asymptotic proportion of group choices of A_1 does not vary much with β, but the choices of the second and third men do depend markedly on β.

It seems clear that the results of the present experiment would best be described by this more general model with some value of β between zero and one. However, were we to apply this model, we could not estimate β because the asymptotic level of group A_1 choices is not sufficiently clear. Note, nevertheless, that (1) the resulting estimate of α would be *between* 0.96 and 0.98, and thus in the usual range; (2) E(P) would be *between* 0.75 and 0.85, more closely corresponding to the observed 0.77 for the last twenty trials.

In order to test this model, we need data on individual choices, which were not collected in the present experiment. Very tentative results of subsequent work, however, tend to substantiate the existence of support, at least in groups which make appropriate evaluations of the situation.

We note, in conclusion, that these preliminary models began with a focus on the *adaptive* aspects of interaction; but we have at once been led to introduce support operators, taking cognizance of the *integrative* aspect of interaction. Models being considered presently attempt to describe still other aspects of interaction.

SEARCH BEHAVIOR IN INDIVIDUAL AND GROUP PROBLEM SOLVING

OMAR KHAYYAM MOORE AND SCARVIA B. ANDERSON*
Naval Research Laboratory

THE focus of attention in this paper is on problem solving—problem solving as it occurs within small groups and as it is carried on by individuals working alone. Do groups and individuals differ in their modes of attack on complex rational problems? Are groups more efficient than individuals in problem solving? If there are differences, what light do they throw on the effects of social interaction? What methods of investigation should be used to study problem-solving behavior? These questions are perhaps more suggestive than penetrating. In any case, they are not likely to be resolved easily or quickly. First of all, little is known about human "higher-order" problem solving. This is a relatively neglected area of research within psychology,[1] although at present a number of able investigators are turning with renewed interest to the domain of "thinking."[2] Sociologists, for their part, are becoming increasingly interested in doing laboratory studies of small group interaction.

In this paper the interests both in problem solving and in consequences of group interaction are combined. The results of an experiment on individual and group problem-solving behavior are presented. In addition, a new experimental technique for studying "higher-order" problem solving is explained and illustrated. First, however, let us consider some of the general problems connected with problem-solving research.

THEORETICAL AND METHODOLOGICAL ISSUES

Problem-solving behavior may be thought of as being divided into two phases. The first phase begins with the inception of a problem and ends when the problem is solved for the first time. The second phase begins whenever a once-solved problem recurs and includes all its subsequent recurrences.[3] In the ordinary course of events there is seldom adequate opportunity to observe adult human beings when they encounter a problem *for the first time*. Some adults living within the context of a stable society may not have faced a radically new problem since childhood; they repeat and perfect solutions already acquired. They practice learned behavior rather than learn new behavior to be practiced.

The analysis of the period between the inception of a problem and its first solution seems to be of special importance.[4] The

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Expanded version of paper read at the annual meeting of the American Sociological Society, September, 1954.

[1] This is not to deny that there have been a number of outstanding contributions in this field; e. g., T. W. Cook, "The Relation between Amount of Material and Difficulty of Problem Solving," *Journal of Experimental Psychology,* 20 (1937), pp. 178–183, 288–296; K. Duncker, "On Problem-Solving," *Psychological Monographs,* 58 (1945), No. 5; N. R. F. Maier, "Reasoning in Humans," *Journal of Comparative Psychology,* 10 (1930), pp. 115–143, *Journal of Comparative Psychology,* 12 (1931), pp. 181–194, *Journal of Experimental Psychology,* 35 (1945), pp. 349–360; M. Wertheimer, *Productive Thinking,* New York: Harper, 1945.

[2] For example, the National Science Foundation sponsored a Conference on Human Problem Solving Behavior, April 6–8, 1954, New York University.

[3] Of course, no two occurrences of a problem are exactly alike; but we believe that satisfactory operational specifications for "problem identity" can be devised.

[4] See D. M. Johnson, "A Modern Account of Problem Solving," *Psychological Bulletin,* 41 (1944), pp. 201–229.

actions of people faced with new problems may reveal a great deal that is ordinarily concealed or at least difficult to observe when they are practicing solutions already acquired. In the study of this first phase of problem solving, the phase that will be called here 'initial search,' it is essential to structure experimental situations so that the subject has an opportunity to exhibit search activities. The comparatively few experimental investigations of this activity would be classified ordinarily as experiments on "thinking," "reasoning," or "higher-order problem solving." In terms of the present analysis, the distinguishing feature of such research is not that it necessarily treats so-called "higher" as opposed to "lower" psychological processes, but rather that primary attention is focused on initial search. Therefore, if this is the center of interest, the problems posed for the subject must be novel and sufficiently difficult to prevent too rapid solution. A solution would be too rapid if it did not permit the investigator to observe the search process. It remains to be seen, of course, whether special laws of behavior will be necessary to explain the phenomenon now characterized as 'higher-order problem solving.' It seems premature to be concerned about this prior to systematic observation of initial search behavior under carefully controlled conditions.

The experimental study of initial search activity is quite clearly dependent upon (a) using tasks which are radically new to the subject and (b) having these tasks, posed by the experimenter, accepted as problems by the subject. The question of the artificiality of laboratory experimentation in this area turns about the acceptance of tasks as problems. If it were possible to transport a subject into another "dimension," one in which habitual responses were ineffective and new responses had to be acquired, something might be discovered very quickly about the human "search model." In lieu of such a super-mundane experimental resource, a contrived experimental "cosmos" may have to suffice. The most subtle and cheaply fabricated materials out of which to construct it are symbols.

The symbolic system with which we are concerned is called the 'calculus of propositions,' and it is one interpretation of abstract Boolean algebra. This calculus, one of the calculi of symbolic logic, is an enacted language system consisting of various kinds of symbols, rules governing the combination and manipulation of the symbols, a set of postulates, derived theorems, and definitions. It is beyond the scope of this paper to explain the calculus. Lucid accounts of it can be found in symbolic logic texts.[5] The general problem of adapting the calculus for use in experimentation and certain advantages that it offers both for individual and group experiments have been treated elsewhere.[6] It will be necessary, however, to explain certain aspects of the calculus in order that a number of the response measures used in the experiment to be reported here will be meaningful.

Perhaps the most direct way to clarify the relevant properties of this symbolic system is to describe one way it can be manipulated by the subject within an experimental situation. The subject, of course, can be either an individual or a group. Imagine that the following pattern is projected on the wall in front of a subject:

Sector One 1. $p \cdot \sim p$	Sector Two q
Sector Three	Sector Four

He has been told, prior to entering the room, that the symbols to be projected on the wall behave in certain lawful ways. There are twelve laws (i.e., transformation rules) that govern this domain of symbols. The name of each law is its number. If the name of any law is pronounced (i.e., if any number from 1 to 12 is spoken) and the number of any line or lines in Sector One is specified, then the law will be applied if it is applicable. For example, if the subject calls out, "Apply law 7 to line 1," the law is not applied because it so happens that it is not applicable. If the subject orders the application of law

[5] For example, Alice Ambrose and M. Lazerowitz, *Fundamentals of Symbolic Logic,* New York: Rinehart, 1948; W. Quine, *Methods of Logic,* New York: Holt, 1952.

[6] O. K. Moore and Scarvia B. Anderson, "Modern Logic and Tasks for Experiments on Individual Problem Solving Behavior," *Journal of Psychology,* in press; O. K. Moore, R. S. Rudner, and Scarvia B. Anderson, "Logic, Computers, and Small Group Research," unpublished manuscript.

1 to line 1, then the law is applied. A new symbol combination appears in Sector Three, as shown below.

Sector One	Sector Two
1. $p \cdot \sim p$	q
Sector Three	**Sector Four**
2. $\sim p \cdot p$	law 1 to line 1

Each sector in the display has a function. Sector One contains the "given," the initial data with which the subject must work. Sector Two contains the object of his search, the goal to be achieved through the application of the laws. Sector Three contains the steps he generates by applying the laws of the system. Sector Four is used simply to keep track of the "orders" issued by the subject. The subject is free to work not only with the initially given material in Sector One, but also with any symbol combinations he produces. He may work with the laws in any order whatsoever and apply them to the lines in Sector One and Three as he pleases. However, if he issues an order which is not permissible in this symbolic domain, then no expression is generated and a buzzer sounds. The task is completed when he generates an expression that is identical with the one in Sector Two and he states that this is the case.

Let us consider some of the symbol combinations a subject could generate in the case of the example problem.

1.	$p \cdot \sim p$	q
2.	$\sim p \cdot p$	law 1 to line 1

Law 1 obviously can be applied to line 1 or the expression on line 2 could not have been generated. However, a step may be permissible without being a step in the right direction. This is the case here; '$\sim p \cdot p$' is not needed to solve the problem.

3.	$p \cdot \sim p$	law 1 to line 2

Notice what has happened here. Lines 3 and 1 are now identical. The subject has returned to his point of departure. The expression on line 3 was obtained from line 1 by means of line 2. We call this phenomenon 'cycling.' Notice also that a cycle is not simply a response repetition. The application of law 1 to line 1 and its application to line 2 are two different responses, yet they have the effect of bringing the subject back to his point of departure. He is getting nowhere.

4.	$p \cdot \sim p$	law 1 to line 2

Again we have the expression '$p \cdot \sim p$.' This time it was generated by repeating the order, "law 1 to line 2." This phenomenon is called 'repetition' as opposed to 'cycling.' Repetition and cycling are both redundant activities, a kind of going in circles.

5.	p	law 8 to line 1 [7]

The expression on line 5 is necessary for solution. This is the first time the subject has taken a step forward. Step 5 could have been obtained from any of the preceding lines. Lines 2, 3, and 4, though redundant, need not prevent solution, although they make the display unnecessarily complex.

6.	pvr	law 9 to line 5

Law 9 permits the subject to bring new material into the problem. Here the subject introduces 'r' which is not needed instead of 'q' which is. This is called 'introduction of extraneous material.'

7.	$(pvr) \cdot (pvr)$	law 3 to line 6

This step merely compounds the difficulty met in the prior step. The subject has increased the amount of extraneous material.

8.	$(pvr) \cdot (pvr)$	law 1 to line 7

Lines 8 and 7 are identical, yet 8 was obtained without the repetition of an order and without the mediation of a third step. This illustrates a special kind of cycling. In the first case of cycling which was examined, the second identical line was obtained from the first *by means of a mediating step*. In

[7] Law 8, like a number of the other laws, may be applicable to more than one part of an expression. When this is the case, the experimenter asks the subject which part he wants to deal with. There are a number of technical and procedural points of this sort; it does not seem necessary for the present purposes to elaborate them.

the case of lines 7 and 8, there is no mediating step. This is called, then, 'non-mediated,' as opposed to 'mediated,' cycling.

9.	$\sim p$	law 8 to line 1

This is the second necessary expression that has been generated.

10.	$\sim pvq.$	law 9 to line 9

In this case 'q' needed for solution was introduced rather than the extraneous 'r.'

11.	$p \supset q$	law 6 to line 10

Granted that the subject has generated the expression on line 10, then this is the next step needed. There are two routes to the solution of this problem. The routes are of equal length and involve the same rules. The subject has the choice of appending 'q' to either 'p' or '$\sim p$' and, once this choice is made, the shortest route to solution requires that he work with the product thus obtained.

(12)	buzz	law 12 to lines 11 and 5

Within this system of symbols the subject has breached a "mos." It is not permissible to apply law 12 to the expressions specified.

12.	q	law 11 to lines 11 and 5

If the subject notes that the expression on line 12 and the expression in Sector Two are identical, his calculus problem is solved. It can be solved in only five steps; i.e., steps 5, 9, 10, 11, and 12. Instead, the hypothetical subject made 12 responses, 11 of which eventuated in viable steps, and one of which resulted in the buzzer sounding. In the process of solution he cycled twice and repeated once. Extraneous material was introduced and later compounded.

The examination of the example problem makes it clear that the responses of a subject can be appraised with respect to their relevance to goal achievement. It is evident that certain aspects of the subject's search behavior are susceptible not only to description but also to quantification. The classification of search behavior which we have developed was largely suggested by observation, although it could have been anticipated on theoretical grounds. In exploratory experiments there was an opportunity to watch subjects struggle with calculus tasks. The kinds of responses mentioned here were exhibited frequently enough to attract attention.[8]

PURPOSE OF EXPERIMENT

Let us turn now to the consideration of an experiment using the technique that has been described. The purpose of this experiment is to compare the performance of individuals and small groups attempting to solve highly complex problems.

The groups that we used may be characterized as temporary ad hoc three-man groups.[9] Group members were all "generalists," as opposed to specialists; they all had the same kind and amount of training to work on the experimental task. The problem situation in which they were placed may be described as non-zero-sum; that is, no group member's gain was necessarily another group member's loss. All could par-

[8] There are additional response categories, three of which are as follows:

a. Line fixation. In the example problem there is only one line in Sector One. The experimenter is free to make up problems with as many lines as he chooses. Some subjects fixate on only a small part of the given and do most of their manipulations with that part. Or they may fixate on one of the expressions that they have generated.

b. Law fixation. Just as in some instances subjects may become preoccupied with some line or lines in the problem, so too they may concentrate on using certain laws to the exclusion of others. They may attempt to open all doors with the same key.

c. Formal perturbance. Under certain circumstances it is impossible simultaneously to modify a given expression in one respect and to maintain its *relevant* characteristics in other respects. For example, if '$p \vee q$' is sought and '$p \supset q$' is present, any means (laws) used to convert '$\supset$' to '$\vee$' will result also in obtaining a '$\sim$' before the 'p.' Some subjects, however, persist in this type of activity.

[9] For an interesting comparison of temporary three-person ad hoc groups with three-person family groups and a discussion of the extent to which generalizations may be made from one to the other, see F. L. Strodtbeck, "The Family as a Three-Person Group," *American Sociological Review,* 19 (1954), pp. 23–29.

ticipate and share in the solution of the problem.[10]

The experiment was designed to determine how the behavior of groups such as these differs from that of individuals during initial search in problem solving. Specifically, in terms of the calculus task, how do groups differ from individuals with respect to (a) number of solutions, (b) length of time required for solutions, (c) number of correct steps, (d) number of errors, (e) number of cycles, (f) number of repetitions, (g) distribution of correct steps and errors over time, (h) laws used, and (i) knowledge about the laws?

Taylor and Faust, using Twenty Questions as a task, found group performance generally superior to individual performance.[11] Shaw reported similar results using "puzzles."[12] In the absence of criteria for establishing the comparability of their tasks and the one used in the present experiment, however, we hestitated to make predictions on the basis of their results.

EXPERIMENTAL PROCEDURE

Subjects. The subjects were 24 Navy enlisted men with a mean GCT score of 59.25 (range 58–62); that is, their scores lay at about one standard deviation above the population mean. Their mean age was 18.5 years (range 17–22), and they had on the average 11.5 years of schooling (range 9–13).

Training. On the first day all subjects were given one hour and 10 minutes of instruction in the use of the 12 laws of the system. Instructions were presented by means of long-playing records. Training aids included boards with magnetic symbols which subjects manipulated in accordance with instructions from the recording, law sheets summarizing the 12 laws, and decks of plastic cards containing each of the 12 laws and examples of correct applications of the laws. Subjects were not trained to solve problems; they were trained only in the uses of the 12 laws.[13]

Law Application Test. Following presentation of instructions, subjects were given a test containing 196 items. Each item consisted of an expression in the symbolic system and the number of a law. The subject's job was simply to indicate whether a law was or was not applicable to the corresponding expression. Test scores were corrected for "chance" (R–W). The results of the test were used for "matching" groups and individuals. In addition, the test was re-administered at the end of the experiment in order to test individual versus group "gains" in knowledge about the applicability of the various laws.[14]

Matching. Since a small number of subjects were to be used in the experiment, it was considered desirable to "match" groups and individuals on as many variables thought to be relevant as possible, in order that any obtained differences could be attributed to the major variable of the experiment—individual versus group problem-solving conditions. All subjects had approximately the same GCT scores, and their ages and educational backgrounds were similar. An attempt was made to "match" six groups to six individuals on the basis of scores on the Law Application test. Table 1 shows the test scores of subjects assigned to the two conditions.

TABLE 1. INITIAL LAW APPLICATION TEST SCORES OF SUBJECTS ASSIGNED TO "INDIVIDUAL" OR "GROUP" CONDITION

Individual	Score	Group	Mean Score	Scores of Members
1	94	1	91.33	104, 88, 82
2	76	2	74.67	78, 76, 70
3	60	3	59.33	64, 58, 56
4	56	4	52.67	56, 52, 50
5	44	5	45.00	48, 47, 40
6	33	6	32.33	37, 34, 26

Problem-Solving Sessions. Each individual and each group participated in one 30-minute

[10] See J. von Neumann and O. Morgenstern, *Theory of Games and Economic Behavior*, Princeton, N. J.: Princeton University Press, 1947, pp. 46–47.

[11] D. W. Taylor and W. L. Faust, "Twenty Questions: Efficiency in Problem Solving as a Function of Size of Group," *Journal of Experimental Psychology*, 44 (1952), pp. 360–368.

[12] Marjorie E. Shaw, "A Comparison of Individuals and Small Groups in the Rational Solution of Complex Problems," *American Journal of Psychology*, 44 (1932), pp. 491–504.

[13] This instructional technique is a modification of one explained more fully by Moore and Anderson, *op. cit.*

[14] Results of previous administrations of this test following the same instructions used here yielded reliability estimates of .90 for 78 subjects from the general population of Navy enlisted men and .92 for 27 Navy enlisted men within the GCT range used in this study. Estimates of reliability were based upon the relationship of test variance to item variance (Kuder-Richardson #20).

problem-solving session per day for 10 days. A different problem was given each day, but all individuals and groups received the problems in the same order.

The general procedure for individuals and groups was the same. The subject sat in a darkened room facing a blank wall. He was provided with a law sheet, set of example cards, and a lighted clip-board. On the opposite side of a partition the experimenter operated a Vu-Graph overhead projector. At a signal (the beginning of the 30-minute period) the projector was turned on displaying the problem (Sectors One and Two) on the wall. The subject then called out law-line combinations, as described in a preceding section. He pressed a key as he called out each "order." This procedure was continued until (a) a bell activated by an automatic timer signaled the end of the 30-minute period or (b) the subject solved the problem.

With the three-man groups, one man was selected each day to serve as "caller" i.e., to call out the law-line combinations decided upon by the group. He was selected by chance (coin-tossing) each day by the members of the group. It was considered important that the group members not feel that the experimenter was selecting leaders for some hidden reason and imposing his choice upon the group. Group members were instructed that the caller was not to give any orders to which all members would not agree. This double set of conditions (having an official caller and granting veto power to each member) was instituted in order to insure that problem solving would be undertaken on a group basis, as opposed to an individual basis; that is, members would be forced to interact at least on the issuance of orders. In some studies, for example, of group versus individual problem solving, there is no experimental guarantee that the phenomenon dealt with is a group rather than a mere collection of individuals.[15]

The steps that a group or individual took during a problem-solving session and the inapplicable suggestions made were kept as a record of performance. In addition, the key pressed when an order was called out was connected to a two-pen Esterline-Angus graphic ammeter. The error buzzer was connected to the same ammeter. Thus a time record was obtained both for orders and errors. The experimenter recorded solution times by marking on the ammeter graph.

Problems. The 10 problems which were used varied in terms of rules required for a minimum solution, number of steps required for a minimum solution, number of lines given, complexity of lines given, and in other ways. The demonstration problem used in an earlier section of this article was problem 6 in the series. Problems 5 and 10 were prejudged to be the easiest problems in the series.

RESULTS

We have indicated that there are a number of different measures of search behavior which may be obtained with the calculus problems. Our concern here is with possible differences between the performance, in terms of some of these measures, of the six groups and the six individuals used in the experiment.

Table 2 summarizes the over-all measures derived from an analysis of steps, errors, and time. Since an attempt was made to "match" individuals and groups, the scores in each case are paired. Individuals solved 13 problems out of 60; groups solved 14. Thus, the mean number of solutions for individuals is 2.17; for groups, 2.33. Individuals took on the average 10.96 minutes for the problems they did solve; groups took an average of 10.71 minutes. Individuals took a mean of 87 steps during the 10-problem series; groups took a mean of 94 steps. 'Steps' refers, of course, to applicable law-line suggestions. Inapplicable law-line suggestions are classified as errors, and individuals have a mean of 16.50 errors over the series. Groups have a mean of 17.17 errors over the series. Individuals have a mean of 10.83 cycles over the problem series; groups have a mean of 12.00. The average number of repetitions for individuals is 6.00; for groups, 2.67. The results of t tests comparing these correlated means are also shown in table 2.[16] Since a t of 2.57 is required for significance at the .05 level (df=5), it is apparent that none of the differences between means for groups and individuals on these over-all performance measures are significant.

Although there are no significant differences between the means of these measures,

[15] See G. B. Watson, "Do Groups Think More Efficiently than Individuals?" *Journal of Abnormal and Social Psychology*, 23 (1928), pp. 328–336.

[16] The tests were carried out according to the classic analysis of the t distributions for correlated measurements.

TABLE 2. OVER-ALL MEASURES OF PERFORMANCE

Number of Solutions		Mean Time for Solutions Obtained (Minutes)		Number of Steps Taken		Number of Errors		Number of Cycles		Number of Repetitions	
Indiv.	Group	Indiv.	Group	Indiv.	Group	Indiv.	Group	Indiv.	Group	Indiv.	Group
5	2	9	12.25	53	62	6	15	0	5	4	2
2	4	17	10	144	97	18	20	25	7	15	5
2	2	4.25	5	55	87	24	14	7	6	1	2
2	1	7.5	6	73	95	18	13	8	11	4	2
1	2	5	19.5	146	124	25	28	25	14	12	5
1	3	23	11.5	51	99	8	13	0	29	0	0
$\bar{X}$ 2.17	2.33	10.96	10.71	87.00	94.00	16.50	17.17	10.83	12.00	6.00	2.67
t .20		.07		.48		.24		.56		1.91	
s^2 2.1667	1.0667	55.5604	27.1104	2080.4000	401.6000	63.1000	34.9667	131.7667	80.8000	37.2000	3.8667
F 2.03		2.05		5.18		1.80		1.63		9.62*	

* Significant beyond .05 level.
df=5

there appears to be a trend in the variability. In every case the variance estimate (s^2) for individuals is numerically larger than the variance estimate for groups. When the differences between the variability for groups and individuals with respect to these six measures are tested for significance by means of F tests (df= 5,5), however, only the difference in terms of number of repetitions is statistically significant ($p<.05$).[17]

Figures 1 and 2 provide a partial picture of the problem-by-problem behavior of individuals and groups. Figure 1 shows the mean number of correct law-line suggestions made by individuals and groups on each of the ten days (problems 1 through 10). Figure 2 shows the mean number of errors made by individuals and groups on each of the ten days. Not only is there no significant difference between individuals and groups in terms of over-all measures of errors and number of steps, but these curves indicate that the patterns of correct responses and errors for groups and individuals are roughly similar over the series of problems.[18]

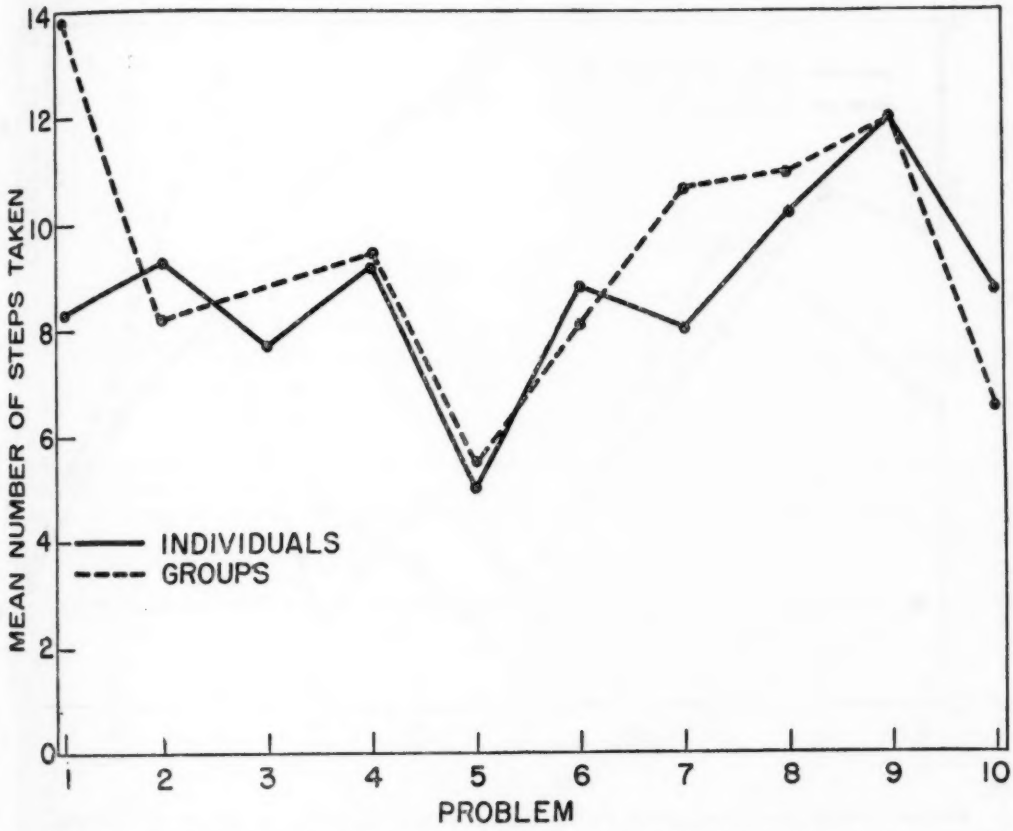


FIGURE 1. Mean number of steps (correct law-line suggestions) for six individuals and six groups on each of ten problems. One problem was given each day.

Figure 3 shows cumulative percentage distributions of steps taken over the 30-minute period for unsolved problems.[19] The

[17] The ratios of variances were corrected appropriately for degrees of freedom. No correction was introduced for matched measurements. Introduction of such a correction would act to inflate the resulting F's.

[18] The curves of Figures 1 and 2 were drawn in order that the "profiles" of individuals and groups could be compared with respect to two variables. It is not meant to imply that the problems (across the abscissa) indicate a continuous dimension. It has been pointed out that problems varied qualitatively from day to day.

[19] Because the electrical timing device failed to work properly during six of the 120 problem sessions, Figure 3 shows the distribution of steps

distribution of steps through time thus is very similar for individuals and groups and is approximately rectangular. There does not appear to be any part of the 30-minute period (such as the first six minutes, or the last six minutes) in which individuals or groups took an unusually large percentage of their total steps. The distribution of errors for individuals and groups during the 30-minute period is similar to that for correct steps; errors appear to be fairly evenly distributed through the 30-minute period both for groups and for individuals.

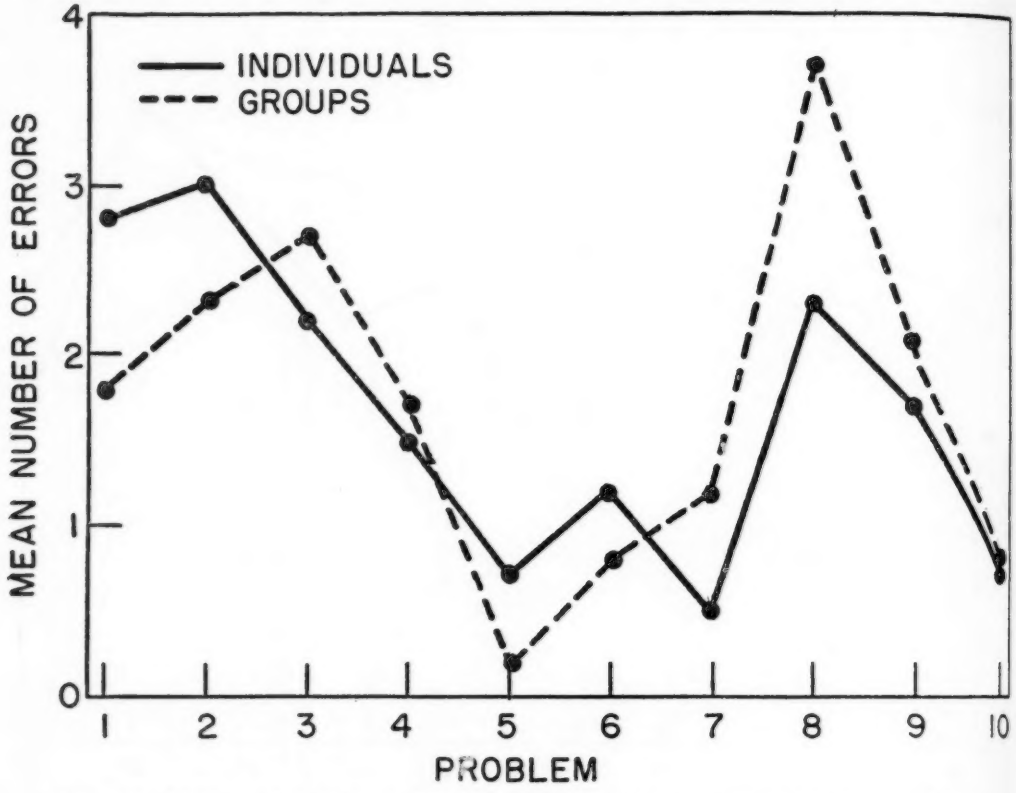


FIGURE 2. Mean number of errors for six individuals and six groups on each of ten problems.

At what point in the 30-minute period did groups and individuals obtain solutions? Figure 4 shows that individuals obtained 77 per cent of their solutions (10 out of 13) within the first nine minutes. The remainder of their solutions was obtained between the 18th and 27th minutes. On the other hand, one or more of the 14 group solutions was obtained during every successive three-minute period up to 24 minutes. No group solutions were obtained in the last six minutes.

It would be desirable to compare in detail the search models of individuals and groups in terms of the particular laws employed in each problem. Here we are prepared, however, to talk about only the total employment of each law by individuals and groups, with the purpose of answering the question: "Do individuals tend to distribute their uses of the 12 laws according to a different pattern from that shown by groups?" The patterns obtained are shown in Figure 5. 'Responses' simply refers to number of attempts to use a law; therefore, all law-line combinations which were called out are included in this summary, regardless of whether the combination was correct or not. The similarity of the profiles for groups and individuals is apparent. The discrepancies that exist between them are generally slight.

taken by individuals on only 45 of their 47 unsolved problems (N=414 steps) and by groups on only 42 of their 46 unsolved problems (N=405 steps).

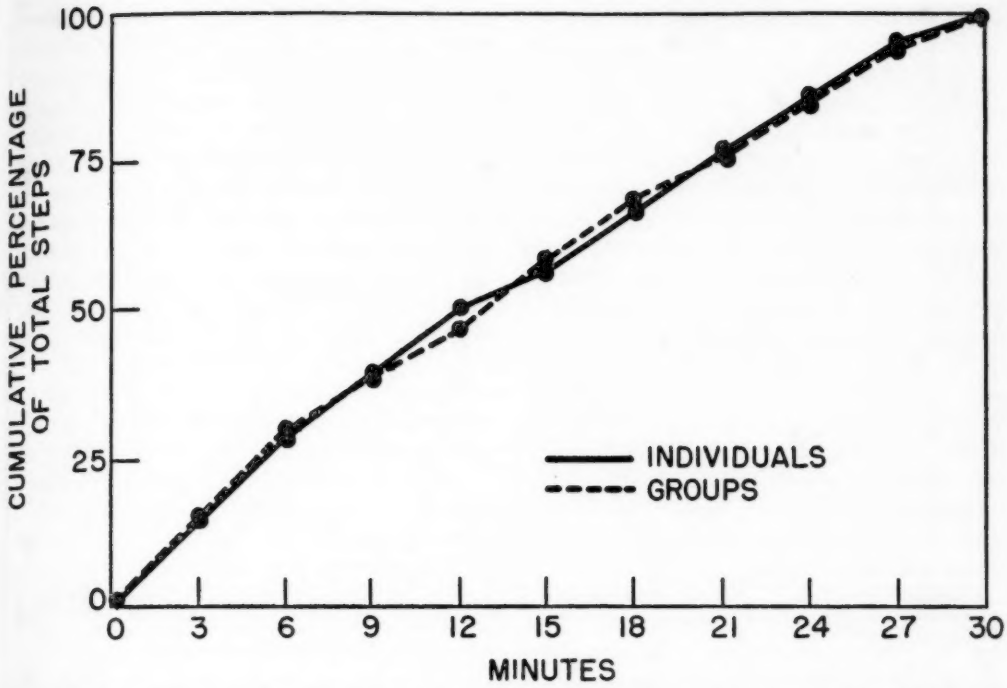


FIGURE 3. Cumulative percentages of total steps (correct law-line suggestions) taken by the end of successive three-minute intervals for unsolved problems. The curves represent 414 steps taken by six individuals during 45 30-minute sessions and 405 steps taken by six groups during 42 30-minute sessions. See footnote 19.

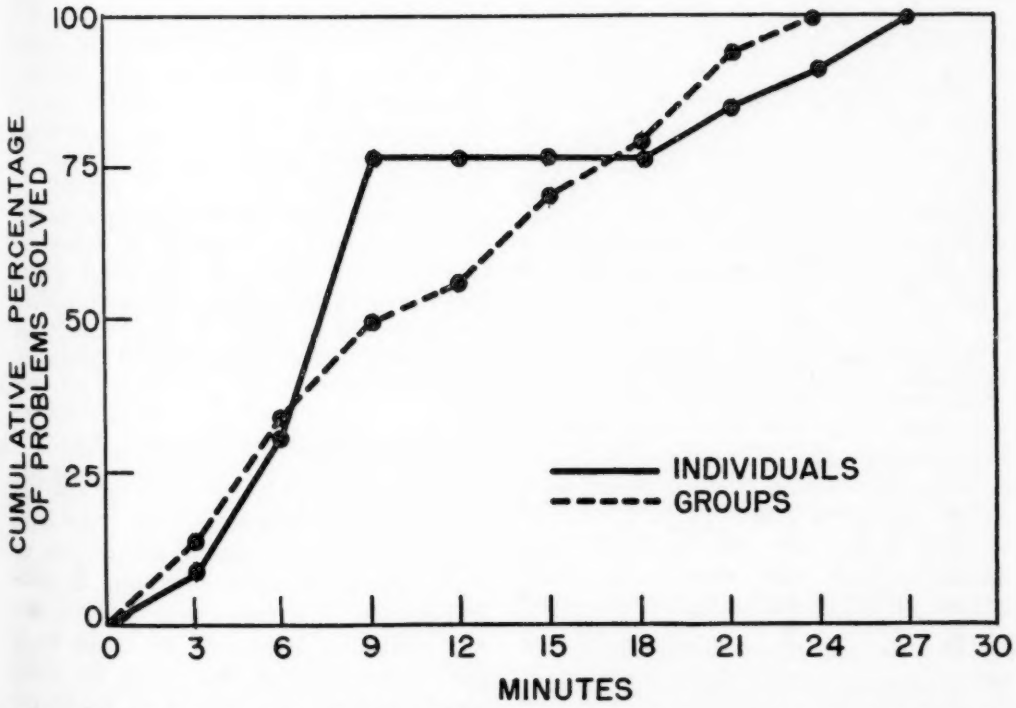


FIGURE 4. Cumulative percentages of total problems solved by the end of successive three-minute intervals. The curves represent a total of 13 problems solved by six individuals and 14 problems solved by six groups.

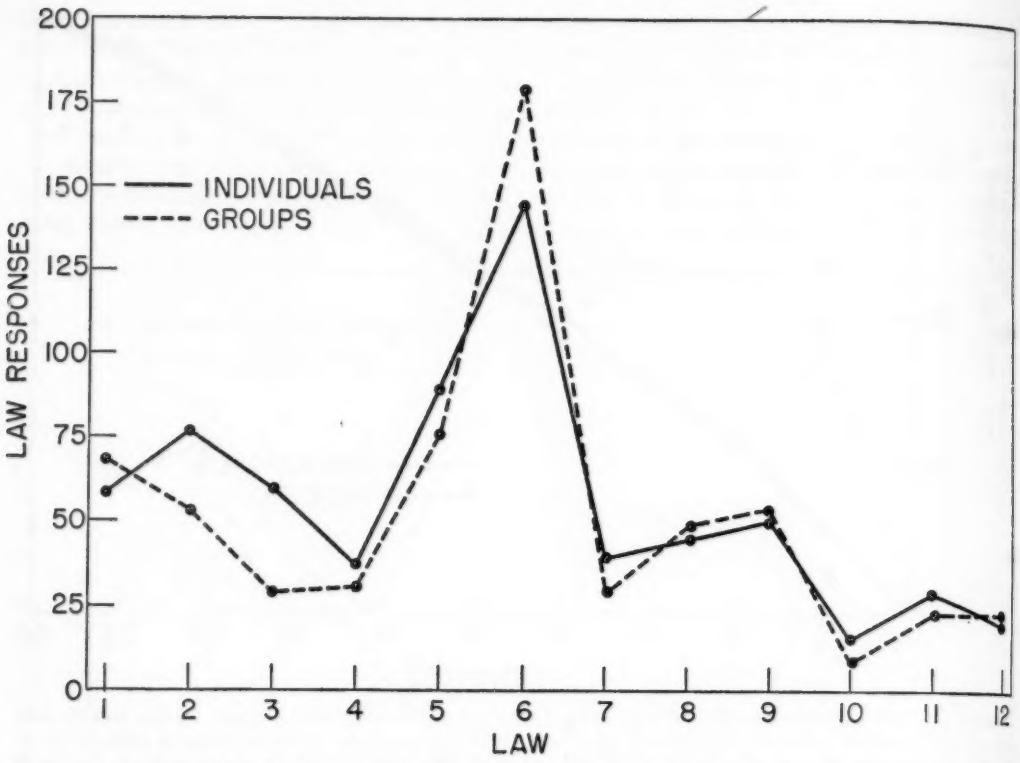


FIGURE 5. Total number of responses using each of the 12 laws. 'Responses' includes both correct and incorrect law-line suggestions made by six individuals and six groups.

The Law Application Test, which was originally used as the basis for "matching" groups and individuals, was re-administered to all 24 subjects at the end of the experiment. The individuals showed a mean gain of 31.50 points on the test; groups, a mean gain of 40.67 points. The difference between these mean gains is not significant, however, when a t test for correlated means is applied (t=.88, df=5). These results are shown in Table 3.

TABLE 3. SCORES ON LAW APPLICATION TEST

Pre-Problem Sessions		Post-Problem Sessions		Gain	
Indiv. Score	Group Mean	Indiv. Score	Group Mean	Indiv.	Group
94	91.33	98	108.00	4	16.67
76	74.67	132	108.67	56	34.00
60	59.33	80	118.67	20	59.33
56	52.67	80	94.67	24	42.00
44	45.00	58	87.33	14	42.33
33	32.33	104	82.00	71	49.67
$\bar{X}$ 60.50	59.22	92.00	99.89	31.50	40.67
t (df=5)				.88	

Numbers of cycles and repetitions for groups and individuals were given in Table 2. Instances of line fixation, rule fixation, formal perturbance, and introduction of extraneous material were all noted in individual or group protocols, but the number of instances of each was too small, we felt, to justify the intensive session-by-session analysis which would be necessary to determine whether there were any significant differences between individuals and groups. More attention will be given to these aspects of the search model in subsequent investigations.

DISCUSSION AND CONCLUSIONS

This experiment had a dual function: (a) to demonstrate the feasibility of a new technique and (b) to obtain information on group versus individual differences in problem solving. The group-individual variable was chosen in order that we might study the effects of social interaction on initial search behavior. The results of the experiment may be summarized as follows:

(1) *Amount of Search Activity.* In ten 30-minute sessions of problem solving, groups responded 667 times (both applicable and inapplicable law-line suggestions); individuals, 621. These are measures of sheer activity, without regard to its cogency. These numbers may suggest that the task itself is somehow constrictive, that is, it "forces" a certain level of activity. However, one individual made only 59 responses during the problem series and another made 171. One group made only 77 responses; another made 152. Groups are heterogeneou with respect to this task; individuals are heterogeneous. But neither in terms of correct responses nor in terms of incorrect responses do groups as a whole differ from individuals as a whole.

(2) *Efficiency of Search.* Popular wisdom offers divided counsel on the relative efficiency of individuals and groups: "Two heads are better than one" and also "Too many cooks spoil the broth." Previous experimenters found groups generally superior to individuals. Although we were hesitant to predict either that individuals would solve more problems or that groups would solve more problems, we did suppose that groups would exercise a critical function which would serve to depress redundant activity (such as cycles and repetitions) and errors. Shaw noted "the rejection of incorrect suggestions and the checking of errors in the group."[20] Whether it is errors, cycles, or repetitions, the results of our experiment do not support this hypothesis. However, again groups were diverse and individuals were diverse. For example, two individuals did not cycle at all; another individual cycled 25 times. One group cycled five times; another cycled 29 times. Assigning a group to work on these problems seems to be no guarantee that redundant and incorrect responses will be minimized.

Groups and individuals solved virtually the same number of problems. If solutions are considered the major product of this activity, then on a man-hour basis individuals were almost three times as efficient as groups.

Both individuals and groups had access to the same set of resources—the same 12 laws. They drew upon this set of resources in almost exactly the same way. Again, however, particular groups and particular individuals differed.[21]

(3) *Temporal Aspects of Search.* It might have been supposed that during a problem session groups would be slower in getting started than individuals and that in general there would be differences between individuals and groups in their distribution of effort over time. This is not the case here, although particular groups and particular individuals differ somewhat in the way they distributed their responses through 30-minute time periods. We do notice a tendency toward differences between individuals and groups in terms of when problems were solved. Individuals tended to get more of their solutions early. However, neither the difference between mean time for group solutions and mean time for individual solutions nor the difference between variability is statistically significant.

(4) *Non-Operational Consequences.* During the running of the experiment, it appeared to the experimenters that individuals and groups were about the same with respect to law-line suggestions. We wondered, however, if there were some subtle effects of working alone or working as a member of a group. Group members actively discussed laws and the conditions under which they were applicable, whereas individuals had no one with whom to discuss these matters. Due to fortunate circumstances connected with the military situation, it was possible to take precautions to keep subjects from discussing the experimental task with anyone outside the experimental room. In addition, subjects were not permitted to take any materials from the room, and tight "security" was maintained. The possibility was considered that although group discussion did not seem to result in group-individual differences in problem performance, there might be some effects which did not have any immediate operational consequences. We thought that one of these effects might be an increase in knowledge about the laws of the system. A re-administration of the Law Application Test, however, did not indicate that group members had picked up signifi-

[20] Shaw, *op. cit.*, p. 504.

[21] An analysis was not presented here of the relationships that obtain between laws required for solution and laws actually used, nor have we analyzed the relative difficulty of the laws and problems. This will be the subject of a separate paper.

cantly more information about the laws than individuals had.

(5) *Variability of Groups and Individuals.* We have pointed out that there are variations in the search patterns of the six individuals and variations in the search patterns of the six groups. The question arises whether the search patterns of groups are more alike than the search patterns of individuals. The answer seems to be "yes," in terms of repetitions. The consistency with which group variance estimates are numerically smaller than individual variance estimates in terms of solutions, mean time to solution, steps taken, errors, and cycles, suggests a tendency for groups generally to resemble each other more in search procedure than individuals resemble each other. It may be the case that social interaction restricts variability.

One of the possible explanations of the fact that six individuals performed as well as eighteen individuals organized into groups is that during the problem-solving sessions, group members had two kinds of problems: (a) they had to work on the calculus tasks and (b) they had to work out a *modus vivendi.* The subjects who were assigned to groups had not worked together before the experiment began. It could be that part of the problem-solving "energy" of group members was diverted from the solution of calculus problems to the solution of interpersonal problems.

It was the object of the present experiment to examine in part the effects of social interaction, rather than to study social interaction as a process. A very careful analysis of the latter would be necessary, however, before we could determine what part of group activity is directed toward interpersonal problems, why some groups are more productive than other groups, and why some group members' suggestions are rejected and others' are accepted. Because the calculus task permits the discrimination and evaluation of the contributions of various group members, it should be useful in future studies designed to answer these questions.

The results of the present study comparing individuals and groups cannot be taken as definitive, of course. Not only was the number of subjects small and the experimental technique relatively untried, but we dealt with a very special kind and size of group and a very special "kind" of subject (in respect to such matters as age, intelligence, sex, and education). The reliability and generalizability of our results can only be determined through continued and systematic experimentation guided by a growing body of theory. The experimental task which has been described here may serve as a source of standard-frame problems[22] that will aid in carrying out such an experimental and theoretical program.

[22] See R. F. Bales, *Interaction Process Analysis,* Cambridge, Mass.: Addison-Wesley, 1950, p. 29

INTERPERSONAL ORIENTATIONS IN SMALL GROUPS: A CONSIDERATION OF THE QUESTIONNAIRE APPROACH

MATILDA WHITE RILEY, RICHARD COHN, JACKSON TOBY AND JOHN W. RILEY JR.*

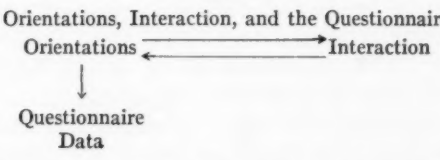
Rutgers University, The State University of New Jersey

SOCIAL systems consist of networks of interpersonal relationships. These relationships tend to express themselves in the process of interaction. Hence, they are frequently studied by research methods for the direct observation of interaction. They may also be studied by questioning each individual about his orientations to the others in the system. The questionnaire technique enables the researcher to take the point of view of each actor in turn, to learn a good deal from him about his perceptions of the others, what he wants from them, and how he plans to obtain from them what he wants. By proper fitting together of the answers of all the participant individuals, the researcher thus obtains considerable insight into the system of relationships.

This concept of interpersonal orientations is, for the researcher, a postulated entity in much the same sense as Tolman's "intervening variable," [1] or Lazarsfeld's "latent attitude," [2] or Hovland's definition of opinion as "implicit response." [3] One assumes that it is never manifested completely in any set of empirical data, but must be in part inferred. Ultimately, the best inferences will undoubtedly be made from several different types of manifest data, as by combined observation and questioning. We have in mind a scheme, as suggested in Figure A, of the way in which these two types of data may relate to the underlying orientations. On the one hand, these orientations, which tend to become partially manifested in interaction, also tend to reflect this interaction themselves.

Figure A

Orientations, Interaction, and the Questionnaire



That is to say, each actor's definitions and expectations of the other actors are constantly being tested and revised, through interaction, in the light of what these others actually do. On the other hand, these orientations may also be at least partially learned through proper use of questionnaires. Questionnaire data, as Figure A indicates, seem to bear most directly upon orientations rather than on interaction. Interaction, to the extent that it has itself produced these orientations, may, to be sure, be indirectly reflected in the answers to questions. Thus, if one actor describes another as "sympathetic," he is probably in part describing the way this other has acted toward him. Or when an individual reports his own behavior in the interactive situation, this report is in part colored by his point of view, that is, h orientation, and is to this degree a measure of orientation.

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* Expanded version of paper read at the annual meeting of the American Sociological Society, September, 1954.

Other members of the research team who have made important contributions to the development of this approach are: Marcia L. Toby, Mary Moore, Paul Fine, Myron J. Lefcowitz, and John Harless. Data were collected under Contract AF18(600)353 with the United States Air Force monitored by the Human Resources Research Institue. Permission is granted for reproduction, translation, publication, and disposal in whole and in part by or for the United States Government.

[1] Cf., e.g., Edward C. Tolman, "A Psychological Model," in Talcott Parsons and Edward A. Shils (Eds.), *Toward a General Theory of Action*, Cambridge, Massachusetts: Harvard University Press, 1951, pp. 281 ff.

[2] Paul F. Lazarsfeld, "The Logical and Mathematical Foundation of Latent Structure Analysis," in Samuel A. Stouffer, *et al.*, *Measurement and Prediction*, Princeton, New Jersey: Princeton University Press, 1950, pp. 362–412.

[3] Carl I. Hovland, Irving L. Janis, and Harold H. Kelley, *Communication and Persuasion*, New Haven: Yale University Press, 1953, p. 7.

We wish, at this time, to consider certain possibilities and limitations of the questionnaire approach to a study of latent orientations, reserving until some later date the specification of such posited relationships as those suggested in Figure A. For the moment, it must merely be kept in mind that questionnaire data represent a "private," or anonymous, manifestation of the underlying relationships, where the expectations and sanctions of the others are not immediately operative. Moreover, self-reports touch directly upon only those aspects of orientation which reach a certain level of awareness. Beyond this, in interaction the actors also tend to manifest orientations to the situation, as well as to one another; in particular, they attempt to accomplish the task which is at hand. In such respects, questionnaire data are assumed to differ in kind from data obtained by the outside observer of interaction.

In advance of a systematic method of combining data derived from direct observation of interaction with data derived from reports of orientations, there seem to be a number of cogent reasons for developing an adequate questionnaire approach at this time. In the first place, questionnaires may be applied outside the laboratory. Hence they are usable in various social settings where role-relationships have become established, where significant aspects of interaction may not lend themselves to observation, or where groups are relatively large or difficult to assemble for observational purposes. In the second place, questionnaires will often tap much information which is not apparent to the observer of interaction at any given time. Frequently the actor does not state explicitly to the other actors what his own goals are, how he locates and characterizes each of the others, what he expects that they will do, what reference points he uses in evaluating their actions, and the like. Yet, such implicit aspects are certainly not without potential consequence for the system. For one thing, they often lead to nuances of expression which have meaning for the actors themselves though not for the outside observer. In addition, all orientations include an element of expectancy, a prediction on the actor's part of what will happen and what gratifications will accrue; and this reference to the future may well prove to be a useful research predictor of future interactions and future states of the social system. Disparities among the mutual expectations of the several actors, for instance, are precursors of potential strains and instabilities which may often be foreshadowed in questionnaire responses before manifesting themselves in interaction.

Some such possible values of the questionnaire approach will be suggested below through simple empirical examples. These examples are also used to show how orientations may be measured, demonstrating solutions for certain technical problems which arise when the researcher attempts to fit together complex reports of many respondents about many objects. Certain other research problems for which solutions have not yet been found will also be discussed, with particular reference to the need for mathematical models as aids to inference in analyzing certain types of questionnaire data.

RELATION TO OTHER WORK

This is a methodological excursion, concerned with one possible empirical approach to the study of social systems. As such, it is primarily an operational translation of interaction theory, as this has been developed by such writers as Thomas, Cottrell, and Parsons. As Cottrell wrote in 1942:

> A social act is usually not perceived in the same way by actors and observers of the social act. . . . To understand the behavior of a participant, it is therefore necessary to perceive the social act as he does—his notion of how it started, the goals he perceives for himself and the other selves implicated, and the functional relevance he assigns to the intermediate activity . . . [Such] activity . . . always implicates more than one self.[4]

More recently, Talcott Parsons and his collaborators have developed a highly articulated theory of orientations, their classification in terms of the pattern variables, and

[4] Leonard S. Cottrell, Jr., "The Analysis of Situational Fields in Social Psychology," *American Sociological Review*, 7 (June, 1942), pp. 379–380. Cf. also by the same author, "Roles and Marital Adjustment" in *Publications of the American Sociological Society*, 27 (1933), pp. 107–115.

their relationship to the social system.[5] This theory has served as the primary guide for the ensuing discussion.

The relation between the present work and techniques for observation of interaction process, such as those of Bales,[6] has already been suggested. In the study of interpersonal orientations, the two approaches are regarded as supplementary.

In its use of questionnaires, the present approach is closely akin to that of Moreno[7] and the sociometrists, on the one hand, and to that of Lewin, Festinger, and the group dynamicists,[8] on the other. It differs from these two streams of development, however, in the theory which it seeks to implement. Parsons' exposition of the social system is more highly specified than Moreno's important, but relatively general, notion of the sociometric network; while group dynamics tends to be concerned more with the unique properties of the group as an entity than with the system of relational bonds and interpersonal perspectives of which the group is comprised. Our approach is, of course, markedly distinct from that of social psychology in general, in its use of multi-personal concepts: neither interpersonal orientations nor interaction are here viewed with reference to a *single* individual within a social context.

ORIENTATIONS AS A MULTI-PERSONAL CONCEPT

Many of the procedural complexities of measuring interpersonal orientations derive from the requirement for social system analysis that the perspectives of all the participant actors must be taken into account. As Mead[9] and others have made plain, each actor's orientation includes the orientations of the other actors. Beyond this, the orientation of any single actor is in itself incomplete; it must be fitted together with the orientations of all the others. It is this composite character of the concept which seems to be the missing link in many empirical translations of sociological interaction theory.[10] This will become clearer if we set down in advance certain aspects of our definition of the term. (Such definition is, of course, a heuristic device, subject to revision with use.)

In the first place, we use orientation to refer to the relationship between one person, ego, whose point of view we are taking, and particular other persons with whom he interacts. In Parsons' scheme, such relationships have both cognitive and cathectic modes. As we deal with them empirically, only one limited aspect of each relationship is considered at one time, such as *A*'s tendency to "like" *B*, or *A*'s disposition to "talk to" *B* on specified topics. In any case, there is always a reference to a particular other, or set of others, as an object of each orientation. We are not concerned with an individual's personality tendency to act aggressively, for instance, toward people in general; an aggressive orientation refers to tendencies to act in certain ways in relation to specified other individuals.

In the second place, although orientation is a subjective concept and may be used in the studies of the idiosyncratic aspects of the orientations of individual actors, we are here concerned with the typical or common aspects in the orientations of all individuals who are playing similar roles within

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[5] See especially Talcott Parsons and Edward A. Shils, "Values, Motives and Systems of Action" in Parsons and Shils (eds.), *op. cit.* Also Talcott Parsons, *The Social System,* Glencoe, Illinois: The Free Press, 1951, Chapter One.

[6] Robert F. Bales, *Interaction Process Analysis: A Method for the Study of Small Groups,* Cambridge, Massachusetts: Addison Wesley Press, 1950.

[7] Jacob L. Moreno, *Who Shall Survive? A New Approach to the Problem of Human Interrelations,* New York: Beacon House, 1953.

[8] Cf., e.g., Leon Festinger, Stanley Schachter and Kurt Back, *Social Pressures in Informal Groups,* New York: Harper and Brothers, 1950.

[9] George H. Mead, *Mind, Self, and Society from the Standpoint of a Behaviorist,* ed., with an introd., by Charles W. Morris, Chicago: University of Chicago Press, 1934.

[10] See Matilda White Riley, John W. Riley, Jr., Jackson Toby, *et al., Sociological Studies in Scale Analysis,* New Brunswick, New Jersey: Rutgers University Press, 1954, Chapter IX. This fitting together of the attitudes of the different group members has been used by Fred L. Strodtbeck for quite a different purpose in two studies: "Husband-Wife Interaction over Revealed Differences," *American Sociological Review,* 16 (August, 1951), pp. 468 ff.; and "The Family as a Three-Person Group," *American Sociological Review,* 19 (February, 1954), pp. 23 ff.

a system. Thus, the following tables show the modal patterns of liking or communicating between persons of given statuses. The analysis takes account of this modal tendency, rather than of individual deviations from it. We attempt to derive those orientations which are *proper to the role*, not to its particular incumbent.

Finally, these modal orientations of roles are viewed as fitting together into a system of social relationships. The more nearly they complement one another, the more stable the social system is assumed to be.

AN EMPIRICAL EXAMPLE

The following examples will illustrate an attempt to apply this concept of orientation. They are not presented for any intrinsic interest, or with reference to substantive findings as such. Nor do we wish at this time to discuss details of research design which might be varied in other questionnaire studies to produce results of greater or less validity. The data will, rather, be used in the effort to specify some of the basic problems and possibilities of a questionnaire approach to social system analysis.

As part of a larger study, each student in the 9th and 10th grades of eight New Jersey high schools[11] was asked:

> Who in the grade do you personally like best?
>
> Who in the grade do you think likes you best?

Sufficient space for several names was provided beside each question. The answers were then punched onto an I.B.M. card for each dyad, or pair-combination, of students. For instance, if Mary says she likes Catherine and thinks Catherine likes her, this information is recorded on the Mary-Catherine card. If Mary likes but does not expect liking from Susan, this is punched into the Mary-Susan card. And so on. In this way, all possible pair-combinations of students within each grade are transferred to cards, yielding a total of N (N—1) dyad cards.[12]

By making simple tabulations from these cards, something may be learned about "liking" as an aspect of dyadic relationship. For example, it turns out that if *A* likes *B*, he perceives this cathexis as mutual in a large number of cases. Thus liking appears, on the whole, to demand liking in response.[13] Such data refer, of course, primarily to the orientation concept, and are made available by a questionnaire approach.

Our interest is, however, not simply in the relationship between liking and expectation —which are two aspects of the orientation of a single individual.[14] Beyond this, we are concerned with the degree to which *B*'s orientation matches *A*'s expectations. Still further, our concern is with the relation between dyadic liking and other orientations of still other actors in the larger system—the grade or the peer group. As some indication of the orientations of these others, we made use of a measure of status. This measure is an object scale (fully described elsewhere[15]) which represents the collective orientations of deference elicited by each student from all the others. We now ask: To what extent does the liking of *A* and *B* for

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[11] Of the 3156 students in these grades, no data were obtained from 15 per cent who were absent on the day on which the questionnaire was administered. The materials presented here refer only to dyadic relationships between girls. Boy-to-boy orientations seem to be slightly different in character and will be discussed in detail in a later paper. Very few cross-sex relationships were reported.

[12] For a discussion of the implications of dyad analysis and a description of machine methods of handling dyadic data, see Riley, *et al, op. cit.*, Chapters VII, VIII, X, and XIV.

[13] An important element of over-simplification in these examples lies in the assumption that liking is the only appropriate response to liking. No question was asked here about other responses which might also be expected. Many relationships are, of course, complementary in the sense that the partners contribute differentiated actions. More elaborate examples must take such possible differentiation into account.

[14] Cf. use of similar questions in such studies as George A. Lundberg and Lenore Dickson, "Inter-Ethnic Relations in a High-School Population," *American Journal of Sociology*, 58 (July, 1952), pp. 1–10; and Renato Taguiri, "Relational Analysis: An Extension of Sociometric Method, with Emphasis on Social Perception," *Sociometry* 15 (February-May, 1952), pp. 91–104.

[15] Riley, *et al., op. cit.*, Chapter XVIII. This measure is logically close to Robert F. Bales' determination of "generalized roles" through sociometric ratings. Bales reports no analysis of the dyadic bonds, however—of *who* votes for whom. See "The Equilibrium Problem in Small Groups" in Talcott Parsons, Robert F. Bales and Edward A. Shils, *Working Papers in the Theory of Action*, Glencoe, Illinois: The Free Press, 1953, pp. 143 ff.

each other depend upon their respective statuses?

Accordingly, Table 1 presents the dyadic

TABLE 1. EXTENT OF DYADIC "LIKING" * (by the statuses of both partners)

		Status of Object		
		Medium		High
Status of Subject		3	4	5
Medium	3	.54	.72	.71
	4	.53	.72	.82
High	5	.41	.60	1.18

* The bases and method of computing these indexes are shown in Table 4 below.

data on liking in a matrix, in which all the students, classified by status, are first listed down the side as subjects who report liking; and then listed again across the top as objects who "receive" liking, according to these reports.[16] The figures in the cells of the matrix are indexes[17] of the number of dyads in which *A*, the subject, reports liking *B*, the object.

If a line is now drawn from the upper left corner to the lower right corner, the cells in one half of the matrix represent the mirror image of the cells in the other. Thus, the lower left-hand cell corresponds to the upper right-hand cell, except that the same relationships are observed from two different points of view. Now, if the entries for each pair of corresponding cells are compared with one another, it appears that those in the upper right half are consistently the larger. Thus, liking directed from status 5 to status 3 is .41; whereas from 3's to 5's it is .71. In the same way, liking directed by 5's to 4's is .60, but from 4's to 5's is .82. In the third pair of cells, liking from 4's to 3's is .53, while the converse index is .72. In other words, subjects are more apt to say they like objects of higher, rather than lower, status than themselves. Thus, this form of cathectic orientation appears to be related to the statuses of the two partners.

The researcher now goes on to ask himself two questions: Is this status asymmetry recognized, or expected, in equal measure in the several cells? And does status affect the extent to which *A*'s orientation toward *B* is parallelled by *B*'s orientation toward A? Table 2 shows the relationship between *A*'s

TABLE 2. IF *A* LIKES *B*, HOW CONFIDENT IS *A* THAT *B* LIKES HIM?

		Status of Object		
		Medium		High
Status of Subject		3	4	5
Medium	3	75% (147)	73% (304)	61% (176)
	4	77% (221)	72% (469)	61% (311)
High	5	78% (101)	78% (228)	67% (263)

Percentages=proportion of dyads in which *A* thinks *B* likes him.

Figures in parentheses=numbers of dyads in which *A* likes *B*. This number=100 per cent in each cell.

liking for *B* and the corresponding expectations on *A*'s part that *B* also likes him. Comparisons of the entries indicate that here, too, there is a certain asymmetry. Although liking usually is accompanied by expected liking, nevertheless if 3's like 5's, they expect reciprocation in only 61 per cent of the cases; whereas, if 5's like 3's, they expect reciprocation in 78 per cent of the cases. Thus, the status disparities in liking seen in Table 1 are in part reflected in the differing expectations of response shown in Table 2. Through use of a second question on expectation, as this interrelates with the original question on liking, additional insights have been obtained into the nature of orientation.

Table 3 suggests how such an analysis may be carried one step further through the combination of *B*'s orientation with that of *A*. For this purpose, the data obtained from *A*'s questionnaires are now fitted together with those from *B*'s; information from the Mary-Catherine dyad card, for instance, is transferred to the matching Catherine-Mary

[16] In the effort to avoid circularity in relating status, as one variable, to liking, as a second variable, the three lowest status scale categories are excluded from this analysis. The two questions on liking had been used in the three "easiest" contrived items in the scale, but not in the others.

[17] The raw data have been corrected by the number of individuals in each status category, to allow for the differing numbers within each cell who have a chance to distribute or receive liking. A description of the procedure appears with the full matrix in Table 4. The assumptions involved in this correction procedure and the problem of statistical significance of the differences in Table 1 are not of immediate concern here.

TABLE 3. IF *A* LIKES *B* AND THINKS *B* LIKES HIM, TO WHAT EXTENT DOES HIS EXPECTATION REPRESENT OVERCONFIDENCE?

		Status of Object		
		Medium		High
Status of Subject		3	4	5
Medium	3	40% (110)	42% (221)	47% (108)
	4	26% (170)	28% (337)	43% (190)
High	5	28% (79)	37% (179)	31% (175)

Percentages=proportion of dyads in which *B* does not report liking *A*.

Figures in parentheses=number of dyads in which *A* likes *B* and thinks *B* likes him. This figure=100 per cent in each cell.

card. Table 3 is based on those dyads in which *A* likes *B* and also expects that *B* likes him; it goes on to show the extent to which *A*'s expectations are wrong, so that *B* does not, in fact, report that he likes *A*. Here the asymmetry is again clearly marked: if status 3 individuals do like and expect liking from those in status 5, they are wrong in 47 per cent of the cases; whereas if 5's like and expect liking from 3's they are wrong in only 28 per cent of the cases.[18]

The potential value of utilizing the orientations of the several group members becomes still more apparent when the nature of the status scale is reconsidered. It was stated above that status is here conceived as a reflection of the collective orientations of deference toward each individual as object. A high status object, for instance, may be admired, regarded as a leader, regarded as popular, confided in, and so on, by a variety of different members of the group. Tables 1, 2, and 3 show the relationship between the statuses of each dyadic pair, on the one hand, and their interpersonal tendencies to like and expect liking from each other, on the other hand. Here interpersonal liking appears not as an isolated dyadic phenomenon, but as part of a larger system of differentiated roles in which liking and the several kinds of deferring are in some way all interdependent.[19] Thus the orientations of many individuals are revealed, through questioning, as apparently tending to fit together in an overall pattern.

Findings of this kind have important implications for understanding the functioning of social systems. The data in Table 3, for example, might be taken to fit the assumption that upward-directed cathexes show the greatest disparity between expectation and response, hence are most subject to strain and instability. By repeated questioning of the same respondents at future points in time, such predicted instability might be tested. It is, of course, the questionnaire approach which makes analysis of this sort possible.

THE EVALUATIVE COMPONENT IN ORIENTATION

An important challenge to the student of orientation lies in the distinction between two components of the actor's orientation: its content, on the one hand, and the way in which the actor himself evaluates this content, on the other. Orientation means not only that *A* likes certain objects, for example, but also that he has selected those particular objects from all the available alternatives. Although such choices may often take place below the level of conscious deliberation, the individual establishes his various orientations by selections of this sort; he selects certain objects rather than others, certain ways of defining each object, and certain affective relationships toward each. Moreover, whenever he manifests any orientation by acting, or by answering a question, he may make a further selection. The adolescent boy may be disposed to take two girls out on a date, for example, but must decide between them. Such choices presumably rest upon certain standards or values which the individual uses as criteria. They represent the "evaluative mode" of orientation, which, according to Parsons and Shils, "involves the cognitive act of balancing out the gratification-deprivation sig-

[18] Because of the extreme simplification of this example, its general tendency can probably be guessed from the data on *A*'s orientation alone in Tables 1 and 2. As more and more questions are utilized, however, a study of their interrelation requires the use of both *A*'s orientations and *B*'s.

[19] See Riley, *et al., op. cit.*, Chapter XI, for a discussion of an "organic" system in which an informal "division of labor" operates among the members. Thus status, as it is measured here, may result from differential contributions of the various group members.

nificances of various alternative courses of action with a view to maximizing the gratifications in the long run." [20]

Consequently, when the data show that *A* fails to report liking for *B*, does this mean that *A* does not like him in some absolute sense, or that *A*'s liking for him is relatively insignificant in *A*'s terms of reference? The data in Tables 1, 2, and 3 undoubtedly reflect the combined operation of both these components. In certain instances, it may seem useful or necessary to attempt to separate the two. For this purpose, suitable questions may sometimes be devised. In other instances, even when actors are themselves unable to discriminate between these two components, it might prove possible to disentangle the two through inferences made with the assistance of a mathematical model. If a suitable model could be developed, certain assumptions about the evaluative element in orientation might be defined, and any given set of empirical data tested for consistency with such assumptions. Although we have not yet constructed an adequate model for this purpose, our experience in analysis of a second set of empirical data may suggest the direction of possible further developments.[21]

These data are taken from the same piece of research as those on liking. The procedure was originally developed in a pilot study and reported by John W. Riley, Jr. and Jackson Toby.[22] Each student was asked with whom in his grade he would be most likely to talk over each of a series of topics, ranging from peer relations and the opposite sex, to problems of right and wrong and the fear that something terrible might happen. A "communications" score was then given to each dyad, indicating the number of topics out of a total of seven [23] on which the subject reports a disposition to communicate to the object. This score was intended to measure, not so much the amount of talking that the individual actually does, as his readiness to establish friendship relations with each of his peers. Table 4, which is similar in form to Table 1,[24] presents indexes of the proportion of dyads in each cell for which any communications at all were reported (that is, the dyads having a communications score of 1 or higher).

TABLE 4. EXTENT OF DYADIC "TALKING" (by the statuses of both partners)

Status of Subject	Status of Object: Low 0	1	2	3	4	High 5
Low 0	.07	.26	.22	.26	.41	.49
1	.11	.26	.26	.34	.47	.60
2	.07	.20	.38	.42	.54	.69
3	.07	.18	.36	.62	.76	.81
4	.05	.19	.33	.52	.81	.88
High 5	.04	.16	.25	.39	.66	1.36

The figures shown in the cells are indexes of the number of dyads reporting communication on at least one topic. The raw data in the rows were divided by the percentages of *objects* in the several status categories; the resultant figures in the columns were again divided by these same percentages to allow for the status distributions of the *subjects*.

The distribution of respondents by status was:

Scale Type	Number of Respondents	Per Cent of Total Respondents
0	181	11.60
1	220	14.09
2	305	19.54
3	255	16.34
4	380	24.34
5	220	14.09
	1561	100.0

Certain consistent tendencies appear in Table 4. There is an asymmetry between corresponding halves of the matrix, similar to that found for liking. Moreover, there is an upward tendency by rows, so that the highest entry in each row always appears at the far right. Thus, subjects of any given status are most apt to report a disposition to talk to objects who are of top status. Finally, comparisons made up-and-down

[20] *Op. cit.*, p. 71.

[21] Richard Cohn is now attempting to develop a more general approach to analysis of this sort.

[22] "Status and Interpersonal Communication in Informal Groups," paper delivered at the annual meeting of the American Sociological Society, Berkeley, California, August 31, 1953.

[23] Although ten topics were included in the questionnaire, three of these were used in the status scale discussed above, and were accordingly omitted from the communications score.

[24] The full matrix for Table 1 is very similar indeed to that in Table 4, although liking and communicating by no means always coincide in the same dyads.

within columns indicate a tendency for the highest figures to fall on the principal diagonal of the table. Thus, objects of any given status seem most apt to receive communications from subjects of their own status.

Now, it happens that only one of these tendencies, the last, is in accord with our original assumptions concerning the true character of the underlying friendships which we sought to represent. We had not expected to find the asymmetrical tendency for *A* to relate himself to *B* with no comparable disposition on *B*'s part. Nor had we expected to find the tendency for subjects to relate upward to objects of the highest status. Our assumptions had been more closely in line with the tendency observed in the columns, in which objects are most often mentioned by subjects of their own status. As Riley and Toby put it, in their report on the pilot study, these communications questions were designed to index solidarity, and we should expect that the feelings of solidarity within a status level would be greater than the solidarity between statuses.

This leads us to raise certain questions about the nature of the data in Table 4. Is it perhaps the case that strong evaluative factors are at work here, so that only a portion of the underlying friendships are reported? If so, would it not be logical to hypothesize that the status of the object is the criterion, or is related to the criterion, by which the subject selects, for reporting purposes, certain of his friends rather than others?

Accordingly, we set up a model of the latent relationships which we believe may actually underlie the manifest data in Table 4. We assume:

(1) That the latent relationships are in some way symmetrical, so that both *A* and *B* are "friends" with one another.

(2) That these latent friendships occur most frequently within status lines.

(3) That, whenever a subject names an object in the manifest data, an underlying "friendship" always exists.

(4) That the probability of manifesting "friendship" is independent of the status of the subject, but increases with the status of the object.

If we then ask how such a model should relate to the manifest data, we devise this test: Is it possible, by multiplying each column by a different constant, to a) symmetrize the matrix and b) discover diagonal tendencies both within the rows and within the columns?

Table 5 shows the matrix which results

TABLE 5. LATENT RELATIONSHIPS OBTAINED FROM DATA IN TABLE 4

		Status of Object					
		Low					High
Constant Applied to Columns in Table 4		0 2.3	1 1	2 .71	3 .58	4 .39	5 .26
Status of Subject							
Low	0	.16	.26	.16	.15	.16	.13
	1	.25	.26	.18	.20	.18	.16
	2	.16	.20	.27	.24	.21	.18
	3	.16	.18	.26	.36	.30	.21
	4	.12	.19	.23	.30	.32	.23
High	5	.09	.16	.18	.23	.26	.35

when each column from Table 4 is multiplied by the indicated constant. Here it appears that the table has now become roughly symmetrical, and that the highest figures in both the rows and the columns tend to fall on the principal diagonal. In other words, the test seems to suggest that the manifest data relate to the latent orientations in a fashion which fits our assumptions.

At the the same time, this test requires considerable further exploration. It is, for example, in the nature of such a test that, if the manifest data can be symmetrized by applying constants to the columns, they can also be symmetrized by applying the reciprocals of these constants to the rows. (Similarly, there are many in-between possibilities of applying weights to both rows and columns). Let us consider for a moment the assumptions underlying such a converse approach. We now replace the fourth assumption above by an opposite assumption. We no longer assume that the probability of manifesting friendship increases with the status of the object. We now assume, rather, that the probability of manifesting friendship decreases with the status of the *subject*, but is independent of the status of the *object*.

It may perhaps appear reasonable that higher status subjects have so many friends that they will manifest their relationships to smaller proportions of them; [25] it seems less likely, on the other hand, that the status of the object is irrelevant. Since high status subjects select certain of their friends as objects of communication, how does this selection take place? Does it occur at random? If not, what are the factors which make certain objects more "significant" than others, and yet are not related to the status of those objects?

Moreover, this second model, in which we weight the rows instead of the columns, produces a latent matrix which is quite at odds with our second assumption. Here the symmetrical relationships occur most frequently, not on the diagonal, but at the high-status extremes: that is, the higher the status of either partner, the greater the chance that a latent relationship exists.[26]

Although this particular test is in no sense conclusive at this time, it suggests certain possibilities of exploring the content of latent orientations through the use of models, so as to screen out evaluative factors. Such tests might also be adapted for use with the manifest data of interaction, since action also depends to a great extent upon choices made among alternatives.

IMPLICATIONS FOR FURTHER RESEARCH

These examples seem to make plain that questionnaires can be designed and analyzed so as to throw a good deal of light on the interpersonal relationships in a social system.[27] Many important aspects of these relationships are difficult to study through direct questioning, however, because they occur below the necessary level of awareness, or because the respondent is attempting to conform to the expectations of the questioner. Therefore, improved techniques of questioning, and models for making inferences about latent aspects, seem to be required.

Moreover, fuller understanding of interpersonal orientations might certainly be derived from systematic empirical translation of an articulated theoretical scheme, such as that of Parsons. Future research might well combine the primary cathectic focus of the above examples with a specific cognitive emphasis on how *A* perceives *B*, i.e. "what sort of person" *B* is considered to be. The pattern variables will certainly prove to be important tools for the classification of orientations. (For example, the communications relationships of Table 4 may be further classified as relatively "specific" or "diffuse" in terms of the number and variety of the topics of conversation.) The question of the standards or frames of reference used in evaluative orientation also requires exploration, since the sharing of significant values is of great importance to the stability of the social system. Interpersonal orientations also need study with reference to orientations to the situation.[28]

Another avenue for possible further extension of the questionnaire approach lies in the dynamic character of interaction and of the relationship between orientations and interaction. A questionnaire is always relatively static, disclosing the process as the respondents see it at a given point in time.

[25] In the present example, the questionnaire may have set an artificial limitation on the objects named: two spaces were allowed under each of the seven topics. On the other hand, a similar asymmetry appears in Table 1, for which at least 6 questionnaire spaces were provided. It also appeared in the Riley-Toby pilot study, which was based on personal interviews with unlimited opportunity to name friends.

[26] It is interesting to note the similarity between this second latent matrix, and the who-to-whom matrix as presented by Robert F. Bales, Fred L. Strodtbeck, Theodore M. Mills, and Mary E. Roseborough, "Channels of Communication in Small Groups," *American Sociological Review*, 16 (August, 1951), p. 463. The Bales data are, of course, entirely different in nature from ours. They result from direct observation rather than questioning. They represent an accumulation of interactions which have taken place over a given period of time. Nevertheless, a study of the orientations underlying such interactions might illuminate further the nature of the differences between instrumental relationships in the Bales' problem-solving group, on the one hand, and the more expressive relationships under study in the peer group. Cf. the penetrating analysis of the Bales data by Frederick F. Stephan, "The Relative Rate of Communication between Members of Small Groups," *American Sociological Review*, 17 (August, 1952).

[27] It would, of course, be equally possible to interpret these same data with reference to the personality rather than to the social system, asking such questions as why certain individuals conform, or fail to conform, to the modal tendencies of a given role.

[28] Bales has already defined this area in "The Equilibrium Problem in Small Groups."

There are certain ways, however, in which the approach may be adapted to take account of the time dimension. For one thing, the respondent may be asked directly about changes, about his recollection of the past and his predictions about the future. For another, the same respondents may be interviewed repeatedly at different points of time. This use of the panel technique for the study of interpersonal orientations seems to offer great promise of a better understanding of the dynamics of social systems.

Finally, as we indicated at the outset, latent orientations are of maximum interest only as they are manifested in interaction. Both are necessary to a full understanding of the functioning of social systems. To be sure, observation alone throws light upon both, since orientations may be inferred from interactional data. Yet, interaction is the product of many elements (value-orientations, goal-orientations, expectations and sanctions, and so on) from which the empirical abstraction of interpersonal orientations as a single element may prove difficult. The questionnaire, by contrast, may be especially designed to isolate interpersonal orientations for separate investigation. Hence, future knowledge of the interplay between interaction and the underlying system of relationships may well be furthered by combining these two types of approach: direct observations and questionnaires.

THE CASH POSTERS: A STUDY OF A GROUP OF WORKING GIRLS

GEORGE C. HOMANS
Harvard University

SINCE the Western Electric researches, few studies of single groups of workers have been reported, and even fewer that combined the measurement of individual effectiveness with the systematic observation of social behavior and the interviewing of all the group members. I shall describe briefly here a study that did combine these features.[1] It is a study of the ten girl "cash posters" in an accounting division of a certain company, and it formed part of a study of the division as a whole, which I carried on from December 1949 through April 1950. Since it deals with only one group and that group had only ten members, it can hardly hope to establish general hypotheses about small group behavior. Several such studies, made with comparable methods, might hope to do so, and they would provide the indispensable background to more macroscopic studies of worker behavior, made by questionnaires. But by itself the present one can only be called a case study of the relations between repetitive work, individual behavior, and social organization in a clerical group.

Method of Study. I have described elsewhere my procedure in introducing myself into the company and the division.[2] I chose to study this particular division largely because the nature of some of the jobs allowed the keeping of reliable output records, and because the layout of the "floor" allowed an unobstructed view of what went on. My first step was to occupy a small table at the back of the room. With this as a base of operations, I spent about a month introducing myself to each of the workers, learning the various clerical procedures, and getting a general impression of behavior in the division. Any constraint due to the presence of a stranger seemed to end after I attended the Christmas office party, and from then on I could get no evidence that the workers' behavior was different from what it had been before I came in.

The second stage of the study, which took 14 working days, was systematic observation of interaction in the room, specifically of

[1] The research reported here was made possible financially by the Laboratory of Social Relations, Harvard University.

[2] G. C. Homans, "Status among Clerical Workers," *Human Organization*, 12 (Spring, 1953), pp. 5–10.

who talked to whom, and how often. With 60 persons in the room, I soon found I could not keep a continuous interaction record, and so I adopted a sampling procedure. Every 15 minutes I scanned the room like a radar beam and made a note of which persons were talking together at that time. This method, plus the distances at which most of the observations were made, precluded systematic recording of originations, receipts, and durations of interaction. I could only see *which persons* were interacting. It also precluded recording the content of interaction, except when it took place, as it often did, right in front of me. In this case I did not record content systematically, but only if it seemed to throw light on social relations.

The third and longest phase of the study consisted of individual interviews with the supervisors and workers, conducted on company time in a private room away from the office floor. Before the interview, I asked each worker if she was willing to talk to me; they all agreed except one, whom I did not press further, and who was not one of the cash posters. The interviews, which lasted from one to two hours, were nondirective except in two respects. After explaining again the purpose of the study, I always began the main body of the interview with the question: "How do you like your job?" That is, the initial focus of the interview was on attitudes toward the job. I did not press for information on "personal problems," which rarely came up, or on life outside the job, which often did, but I did not discourage talking about these matters if they arose. Then at some point in the course of the interview, as the question came up naturally, I asked, "Who are your close friends in here?" I wanted to get further systematic information on social organization. I recorded each interview, as I remembered it, as soon as possible after it ended.

During the interviewing period, I kept in touch with the division every day, to make arrangements for the next interviews and to hear the latest gossip. When the interviews were over, I returned for two weeks to my table on the floor, to check my first impressions and to make further brief interaction records to determine whether my original results were badly out of line. They were not.

The management also gave me the basic personnel data on the workers and, if they were kept, their output and accuracy records. The whole study took four months and a half. Let me say here, as I have said before, that I enjoyed my association with a fine body of American men and women. In fact I had a wonderful time.

The Cash Posting Job. The division contained sixty persons, doing several different clerical jobs. I am concerned here with only ten of the workers and only one of the jobs —the ten girls that did the "cash posting."

The cash posting job was next to the bottom of the grades that made up the usual channel of advancement in the division. At the time of the study, a poster made 42.23 dollars for a 40-hour, 5-day week. The posters were all high-school graduates, young in age, and relatively new to the company, as promotion to cash poster from lower grades came fairly rapidly. The reason for this was that the company required girls to leave the company when they married, and most marrying takes place at the ages represented by the cash posters. So vacancies on the job were frequent, but promotion to higher grades took place much more slowly. None of the girls looked forward to cash posting or to work in the company as a permanent job.

The day before a girl left the company to get married, the others, in the afternoon "relief" period, decorated her desk and covered it with candy and presents. Since none of the supervisors felt he should take it on, the girls assigned me the job of handing out the presents and, far more unnerving, of pinning a corsage on the girl who was leaving. In this way I came to be of some use in division society.

One supervisor, who also had special clerical work to do, was in charge of cash posters, and he reported to the division head.

All the reader needs to know about the company is that it had a large number of customers to whom it sent out monthly bills. It was the business of the division to account for the payment of these bills. Because there were so many of them, they were not all sent out on the first of the month but some on every working day. The

bills were printed by machine from punch-cards, whereupon the cards were brought to the division and placed in files, ten in number, which ran in four rows up and down the floor. Although old-fashioned bookkeeping had long disappeared from the company, its language was still preserved, and so the files were called "ledgers," and the cards, since they represented unpaid bills, were called the "arrears."

As customers paid their bills, their cash and checks, together with the bill stubs, went to the cashier's office, not on the floor. There the receipts were added, and from there bundles of stubs, each wrapped in an adding-machine tape showing the total of each bundle, came to the desk occupied by the posters' supervisor, which was close in front of my own. He arranged them on the desk in order of size. A cash poster took the first bundle in order, went to the appropriate ledger and, flipping through the arrears cards, pulled out the cards whose printed numbers corresponded to those on the stubs in her "tape." This was called "pulling cash" or more formally "cash posting" —another survival of the language of ledger-books. The removal of a card from the arrears meant that a customer would not be billed again for that amount next month.

When she had pulled all the cards corresponding to stubs in her bundle ("tape"), the cash poster brought cards, stubs, and tape back to the supervisor's desk, took the first new tape, and repeated the process. The pulled cards and tape were sent down to the machine room, where the cards were mechanically counted and added. This addition revealed any failure of cards and tape to balance and thus any mistakes—wrong cards pulled—that the poster had made. Since each poster kept a record of which tapes she had worked on, it was easy to calculate how many cards she pulled and how many errors she made per hour of work. These output and accuracy records were written up daily and placed in a drawer of the supervisor's desk for the posters to see. The cash posters did look at them, and in summary form they were made available to me.

Ninety per cent of all bills were paid in the exact amount shown on the stub. In the case of over- or under-payments, the posters had to perform certain operations on the cards besides simply pulling them, but for the sake of brevity these will not be described. The number of such payments in a tape, the number of stubs in a tape, and the degree to which the cards corresponding to the stubs were concentrated in a single ledger affected the speed at which the tape could be completed. But the order in which the tapes were picked up equalized these variations, in the long run, among the cash posters.

Besides cash posting, the girls spent some time every afternoon working on "collection stubs." This was a job of determining, before the company put pressure on delinquent customers, whether long-overdue bills had been recently paid. No output records could be kept of this work. When they finished it, the girls returned to pulling what they illogically called "next day's cash".

Cash posting was the only "production" job in the division—the only one it had to stay caught up with every day. And no girl was accepted as a cash poster unless, by the end of her training period, she could pull, on the average, 300 cards an hour. This was called the "quota," and it served as a standard of minimum output. The records show that all the girls did, on the average, make the quota; most of them did not find this hard to do, and some of them made a great deal more. In theory, the supervisor "bawled out" a girl if she failed for two days in a row to make the quota. In fact, he rarely had to, and when he did the bawling out was gentle. But neither did he praise a girl when she made a high record, and there was no incentive payment. The public output records themselves seemed to suffice to keep output up. One of my field notes reads as follows: "Murphy, LoPresti,[3] and others gathered around their boss's desk looking at the output records with cries of 'I made it!' " The fact is that cash posting looked to an outsider like a hard and dull job. A number of girls who were offered it had turned it down. The supervisors wisely felt that they would have a still harder time getting recruits and getting out production if they tried to bear down on a group of young girls like this one.

[3] All names are fictitious but faithful to ethnic background.

The girls liked their immediate boss. He never tried to use "human relations skills." He was frank and outspoken when they broke the rules, but they felt they knew where they stood with him and said—which is the highest of all praise from workers—"He's fair." Or even, "He's a *man!*" For his part he said, "I have a good bunch of girls working for me. I really don't think you could get a better one anywhere. Of course, some of them carry the others. They're not all equally fast. But they do a good job, even the slowest of them. Some of them are so good they really ought to have something better than they have now."

The cash posters were on their feet most of the day, moving, "tapes" in hand, from ledger to ledger. This gave them many chances for social contact, both with members of their own job group and with other workers, many of whom also worked at the ledgers. They made the most of their opportunities, especially as they were convinced they could do their work without concentrating on it—they could work and talk at the same time. In theory, talking was discouraged. In practice, the supervisors made little effort to stop it, except when it got so loud they thought it disturbed some of the older workers. In part, they felt that they could not stop it; in part, that talking did not always get in the way of work. As one of them said, "If you get them on the carpet for talking or making mistakes, you usually find that the girl who talks most or has made the mistake is one of your best girls."

The cash posters spent most of their time on their feet, but they were also assigned small tables, four in one place and six in another, where they could work on collection stubs or where, if they had to pull many cards in a single ledger, they could bring the card tray to work on it seated. Assignment to neighboring tables was an important factor in the formation of friendships. In the last half-hour of the last working day of the year, all tables were reassigned in accordance the supervisor's plan, secret until then. The girls took their new seats to the accompaniment of squealing and giggling. This move was supposed, among other things, to break up cliques that might get in the way of work.

The characteristics of the cash posting job should by now be clear. It was an exceedingly routine and repetitive clerical job, which could be done with little concentration by girls whose main interests were not in the job itself and who were not deeply concerned with promotion in the company. In view of the fact that it required no previous outside training, such as stenography, it paid well. It required no cooperation among the girls but allowed much social interaction. Little pressure was put on the girls to work fast, and morale was generally good.

Attitudes toward the Job. I opened the interviews with the question, "How do you like your job?" And nine out of the ten cash posters said they liked it, the next comment usually being, "It's a job," *i.e.* better than no job at all. Since the interviews were nondirective, I got no further systematic information on the reasons why they liked the job, but I suspect that the frequency with which they spontaneously mentioned some of its features is a pretty good index of their importance to the posters. Only one feature of the job was mentioned favorably by more than half (6) of the girls, and that was the general friendliness of the group and the "niceness" of the people in the division. The only other attitude expressed by more than half (6) may be summed up as: "I do my work and get my quota and that's all."

A characteristic comment was Elizabeth Rourke's: "Then there was an opening on cash posting. I learned the job in three weeks. Most of them take four. I got so I could do 297, so they qualified me and forgot about the last three. After all, a job's a job. It really isn't hard to get the quota. Of course, you have to keep working, but if you do, you don't have any trouble getting over 300. That's all I worry about. As long as I get over 300 I don't care. Sometimes they bawl you out, if you don't make 300 two days in a row. But half the time I think Al Johnson (former boss of the cash posters) is kidding. He says, 'Aren't you ever going to stop talking?' I have to talk, and I think that a lot of the time it helps you to talk. You speed up a little afterwards so's to be sure to make your quota. It makes you feel better. Half the time

you can do your work with your eyes and talk at the same time. The other day I wasn't thinking of what I was doing—I guess I was thinking of something else—and I made 400. I don't usually do that, but Dotty Murphy does it all the time. It's just as easy for her to get 400 as it is for me to get 300. But if you do make 400 no one says anything. You don't get anything for it. You don't get any more pay, so what good does it do you to get 400? Then they might expect you to get 400 all the time."

This last remark is characteristic of situations where restriction of output exists. And other remarks of the same kind were made, for instance: "If you pull a lot of cards, you spoil the job for the other girls. They're expected to pull that many too." In point of fact no one in the room remembered a time when the quota had been anything but 300: it had never been raised. It served as a floor under output, but a glance at the output records later in this paper will show that output varied greatly above the quota. No group norm put a ceiling on output. A couple of years before, when relations between the posters and a former division head were strained, there may have been some restriction. And when Lillian Granara became the first cash poster in recent history to pull over 400 cards an hour, she said she was criticised for doing so. But such behavior seems to have disappeared at the time of my study. When Murphy began to match Granara's performance, she escaped attack. Only the two posters, Asnault and Burke, who had been on the job in the old days expressed, in interviews, disapproval of the speed at which others were working; and on the floor no girl brought effective pressure on any other to keep her output down.

The attitudes characteristic of restriction of output were present in the group; the thing itself was not, certainly not as an organized group practice. But neither did the girls feel under any pressure to work particularly fast. Indeed the lack of pressure may have been the very thing that helped some of them to work, in fact, very fast indeed.

Social Organization. Besides forming a job-group, the cash posters formed a distinct social group, in the following sense. The interaction count showed that only one cash poster (Burke) interacted more often with members of other job groups than with her own. The so-called ledger clerks formed the largest job-group in the division and the one next above the posters in the ladder of promotion, though their pay was the same. Only one of the ledger clerks interacted more often with the cash posters than with members of her own group. This was O'Brien, the youngest of the ledger clerks and the one who had been most recently a cash poster. This tendency of the cash posters to interact with one another took place in spite of the fact that nothing in the work itself or in the layout of the room prevented their interacting more often with members of other job-groups.

Within this over-all unity of the posters, sub-groups could be mapped out both by sociometric choice and by interaction. The sociogram resulting from answers to the interview question: "Who are your close friends in here?" is shown in Figure 1. It

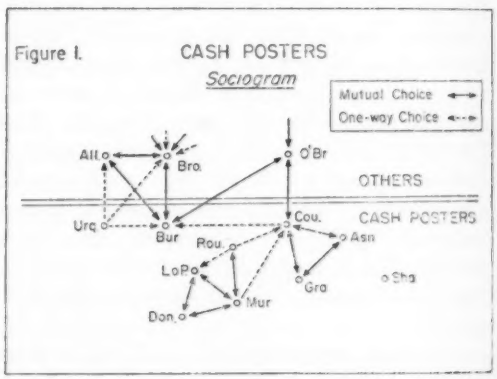

FIGURE 1.

reveals two main trios: Donovan, LoPresti, and Murphy on one side and Asnault, Coughlin, and Granara on the other, with Rourke a link between the two. The first trio was linked by Coughlin to O'Brien, the newest of the ledger clerks. Burke, though generally popular and friendly, did not express close friendship with any cash poster but was attached to a ledger clerk clique centering around Brooks. Urquhart, the newest cash poster, chose three of this clique but was chosen by none. And Shaugnessy, a true isolate, neither chose nor was chosen.

That these choices represented real social

groupings is best shown by data of another sort. Once in the morning and once in the afternoon, the girls left the floor for ten minutes to take their "relief" periods. At these times the same girls regularly gathered at the same places. O'Brien, Coughlin, Asnault, Granara, and Rourke regularly went "downstairs," and Shaugnessy attached herself to them. Murphy, LoPresti, and Donovan went to the "wash room." Burke went to the "vault" with the group that included Allen and Brooks, and more and more often, as time went on, Urquhart attached herself to this group. Not surprisingly, friendship choice and interaction off the floor were closely related.

The most important determinant of clique formation was the position of a poster's table during her first year on the job. Girls who sat near one another then had many chances to interact and tended to become friends, and the friendships once made were apt to persist even after seating arrangements were changed, as they were every New Year's Eve. This was true of both the main trios of the sociogram. As Granara said, "The girls I go around with in here are Ann (Coughlin) and Marie (Asnault). We sat together last year and we used to talk. We'd pass by and call each other 'stupid' and things like that. Other people would think it was an insult, but it's just a joke with us. Ann used to go and have lunch with Shirley (Allen) and Kay (Burke) and Susan (Brooks) and people like that, but now she goes around with us."

Although the girls were observably and by their own recognition divided into cliques, I could observe no hostility between them, and most of the posters spoke favorably of the general friendliness in the division. Murphy said there had been some hostility in the past: "In those days there was a lot of jealousy in here. We were divided into two sides—the girls with their chairs over by the window and the girls inside. You know the way we were set up last year. We would speak to each other, but one group would think the others were trying to get ahead of them." She mentioned the matter of overtime. In that year, Murphy, Donovan, LoPresti, and Urquhart sat together "inside," the others "by the window." While I was in the room, the posters got no overtime work.

Just as I could observe no hostility between the posters' cliques, so I could observe no systematic differences between them in off-the-job activities. But there were some differences between the two groups—they might almost be called moieties—that provided the larger social structure of the division. The older women were not much interested in organized social activities, and leadership in them fell to the younger ledger clerks, notably Brooks and O'Brien. When the office gave a party, these two were elected co-chairmen. Two bowling teams from the office occasionally played against one another, and Brooks and O'Brien were captains of the teams. A tall and beautiful girl and a good bowler, Brooks received more friendship choices than any other person in the division, and was fourth in total interactions. O'Brien interacted more than anyone save Murphy, whom I shall speak of later. The sociogram shows that each headed a different circle of friends, though there were important links of friendship, notably that of Burke with O'Brien, between the two groups.

Compared to the O'Brien group, the Brooks group contained a higher proportion of girls that lived in the suburbs of the city —particularly the "better" suburbs—and they engaged in what were, in their view, somewhat more sophisticated activities, for instance, a skiing week-end. O'Brien, Coughlin, Asnault, and Granara were asked on this party but did not go. As one of the Brooks group (Allen) said: "I used to think that city girls were sophisticated, but when I came in here I found that the country girls knew twice as much as the city girls. By country girls I mean people like Susan Brooks, Kay Burke and myself. Kay likes classical music. The city girls haven't been anywhere, and all they are interested in is getting married when they are 18, sitting at home, and going out to the movies once a week. When I talk about music, they just say, 'Don't say those names to me.'" It is easy to exaggerate these differences and in any event they were not very important to the cash posters, as only two of their number were members of the Brooks group: Burke centrally and Urquhart peripherally.

All I need say in summary of this brief section on social organization is that certain familiar relationships between the distribu-

tions of interaction, interpersonal sentiment, and differences in off-the-job activity have turned up here as they turn up in many observational studies of working groups.[4] Friendship choice was associated with interaction off the job. Cliques, defined by frequent interaction and friendship choice between members, tended to display mutual hostility and different styles of off-the-job activity, though the tendencies were slight. Note also the influence of "external" factors, such as differences in social background and assignments to seats and job, in setting initial values of interaction and activity variables.

talking to another girl during the period in which I counted interactions by the method described above. The figures show the times she talked to another cash poster (in) and the times she talked to some other worker (out). These are raw scores. The "total" figures are corrected to make up for the absences of certain of the girls." Range" is the number of *different* persons a girl talked to. "Sociometric choices" are those *received* by a girl, either from other cash posters (in) or from other workers in the division (out). The way choices were *given* is shown in the sociogram (Figure 1).

Ten cases is a small number on which to base statistical relationships. Yet there is at least one significant correlation among these figures: frequency of interaction is significantly related to sociometric choices received.[5] Popular girls talked, and were talked to, a great deal. This finding may seem to run counter to one of Bales and his associates. Tabulating the data from twelve meetings of five-man discussion groups, these investigators appear to have found an over-all relationship between interactions *initiated* and "liking" choices received. But the *top* men in interaction initiated were not highly chosen on a "liking" question. Indeed they were only third, on the average, in likes, and received *most* dislikes. Unlike my finding, high interactors were not popular. What can account for the difference in the findings?

TABLE 1. CASH POSTERS

	Age	Time on Job	Late-ness	Cards Per Hour	Errors Per Hour	Interaction Jan. 9–26				Soc. Choices		
						In	Out	Total	Range	In	Out	Total
Asnault	22	3–5	6	363	.57	38	8	46	13	2	0	2
Burke	26	2–5	3	306	.66	11	53	64	24	2	3	5
Coughlin	20	2–0	4	342	.40	38	20	58	17	4	1	5
Donovan	20	1–9	7	308	.79	20	10	32	14	2	0	2
Granara	21	1–3	6	438	.65	27	10	40	16	2	0	2
Lo Presti	25	–11	8	317	.03	40	8	56	14	3	0	3
Murphy	19	–7	0	439	.62	52	34	92	22	3	0	3
Rourke	17	–4	3	323	.82	33	27	60	16	1	0	1
Shaugnessy	23	–2	16	333	.44	13	2	16	9	0	0	0
Urquhart	18	–2	11	361	.49	21	9	32	13	0	0	0

Individual Effectiveness. I turn now to the behavior of individual cash posters, especially in relation to effectiveness on the job. Table 1 summarizes the quantitative data I obtained in the study. The "time on job" column gives in years and months the length of time each girl had been cash posting at the time I began the study. The "lateness" column gives the total number of times each girl was late in the five months of the study. Absences are not included, because they seemed, far more than latenesses, to be determined by forces beyond the girls' control. The "cards per hour" column gives the five-months' average of output. The output of only one of the girls, Urquhart, showed the characteristics of a learning curve by being higher every successive month. "Errors per hour" is the same kind of figure as "cards per hour." The "interaction" columns show the number of times a girl was seen

The members of the Bales groups were working on problems, common to all the members, which they were to solve by dis-

[4] See G. C. Homans, *The Human Group*, New York: Harcourt, Brace, and Co., 1950, especially Chs. 4 and 5.

[5] P=.024 by Fisher's Exact Test; population divided into those above the median and those below on each variable.

cussion. In moving towards a solution, the most frequent interactors seem to have taken control of their groups. At least they were the most highly chosen on the question, "Who gave the most guidance?" And as Bales writes, "The more 'directive' and 'constricting' the quality of activity, the more likely it is to arouse negative reactions." [6] Or as I should put it, the authority, recognized or unrecognized, of one person over another will tend to cut down the other's liking for the person in authority.[7]

Unlike the Bales groups, the cash posters were working on individual jobs. Their interactions were largely "social:" not directed to common tasks. The person in authority over them was their boss; no one of them had much occasion to exercise control over the others. These differences in the conditions (external system) under which the groups were brought together go far to account for differences in the findings. Let us remember Claude Bernard's *dictum:* "The experimenter will be convinced that phenomena can never be contradictory if they are observed under the same conditions, and he will know that, if they show variations, this necessarily results from the intervention or interference of other conditions, which mask or modify these phenomena." [8]

To return to the data on the cash posters, one relationship that would be important if it did exist is in fact absent. Contrary to the theory that talking interfered with work, the figures show no correlation—for this kind of work and this kind of workers—between output and frequency of interaction. Indeed the lowest producer and the highest were the two most frequent talkers.

Inspection of the table shows that a girl whose score was extreme on one of the measures was also extreme on the others. The number of individuals is too small to establish as general hypotheses the relationships thus suggested. Instead I shall briefly describe a few of the posters as each exhibiting a distinct constellation of traits, in the hope that other researchers will discover similar constellations.

The Isolate. Mildred Shaugnessy was more often late than the others. She interacted far less than they. She named no one, and was named by no one, as a close friend. Her low interaction was not just the result of her having been in the division a short time. Urquhart had been a cash poster just as briefly, interacted quite a lot, named three girls as friends, and was gaining acceptance. Shaugnessy was the only girl the others expressed any hostility toward, usually giving the reason that she made personal remarks she thought were funny but they did not. She came from a "poor" section of the city, and appeared to this observer less well-dressed than the others. She was not married, but it was believed in the division that she was not living at home, that she had had some kind of quarrel with her family. In her interview, she expressed more attitudes that differed from the modal ones in her group than did any of the others. In particular, she expressed general approval of all the bosses, in spite of the fact that they often "called" her for being late—the other girls were much more selective in their approval—and she said that talking got in the way of posting. She had to concentrate; the other girls were more apt to feel that talking helped work. How far this was a rationalization of the circumstance that people did not in fact talk to her I cannot tell. As a job she would like to have, she mentioned a telephone switchboard of her own in a small hotel, that is, an isolated job. Other studies have found a relationship between absenteeism and failure to be accepted as a member of an organized group at work.[9] In this case I believe lateness to be more closely linked to acceptance. If one is not liked at work, one will be that much less eager to go to work—though Shaugnessy did not make this connection. She has since left the employ of the company to get another job.

The Low Producer. Catherine Burke was a tall, heavy girl, but I doubt that her physical slowness had much to do with the fact that her output was lower than that of any other cash poster. She had been a cash poster

[6] R. F. Bales, "The Equilibrium Problem in Small Groups," in T. Parsons, R. F. Bales, and E. A. Shils, *Working Papers in the Theory of Action,* Glencoe, Ill.: The Free Press, 1953, pp. 146–147.

[7] G. C. Homans, *The Human Group,* pp. 244–248.

[8] C. Bernard, *Introduction a l'Étude de la Médicine Expérimentale,* Paris: Flammarion, 1952, p. 113.

[9] See especially E. Mayo, *The Social Problems of an Industrial Civilization,* Boston: Harvard Graduate School of Business Administration, 1945, Ch. V.

longer than any other girl but one; she expressed no liking for the job, but she had several times refused "promotion" to ledger clerk, saying "It's too much trouble." (The job did not carry any more pay.) Her choice and interaction pattern reflected the facts that she was popular and that many of her friendships were with girls who had moved out of cash posting. Only one poster talked more than she did, but unlike all the others, Burke talked far more with other members of the division than with posters. She tied with Coughlin on sociometric choices, but again, and unlike Coughlin, her choices came more from the others than from the posters. She talked to more *different* people not only than any other poster but than any other person in the whole division. She was also the only cash poster who had any higher education—two years at a Catholic junior college. She got a job in the company because her father had worked in it for many years. The family had done well, lived in a "good" suburb, and her brother had an excellent job in public relations. By reputation she had the most active social life outside the office; she belonged to more outside organizations and spoke of herself as "the traveller of the division:" "In the summer I'm always coming in on Friday with a bag and coming in with it again on Monday morning." Popular though she was, she believed in keeping her social life at the office and her social life outside separate. "I don't believe in having your friends come from the office. Most of my close friends are not in here. They are the girls I went to college with. When I talk to them I find out that I am getting a lot more pay than they are. I tell them that cash posting is something pretty wonderful. I don't let them in on the truth." Perhaps the best way to sum up this fine and able girl is to say that she was bored with the work of the division and wasted on it. Even more than the others, her deepest interests were outside cash posting and indeed the company—just as her interactions were.

She was also a survivor of days when relations with the bosses were much less good than they were in my time. As she said, "Some of the girls that have come in recently think that we (Asnault and herself) are silly. They try to get four or five hundred and walk their legs off. I tell them they don't know how we had to fight to get things the way they are now." She has since left the company to enter a Catholic religious order.

The Accurate Worker. Helen LoPresti's record was remarkable for her extraordinarily small number of mistakes. This cannot be related to her social position; her interaction and sociometric scores were in no way extreme. She herself explained her accuracy by an experience in her past. During the war she had worked for a firm, famous for its efficiency and high-pressure methods, that runs a chain of department stores. As she said, "I worked for a man who was a buyer in jewelry, and kept his figures for him. If I didn't have them right, he would be out hundreds of dollars. He couldn't do the work himself. He had to trust me. So when I work here, I try to be accurate . . . and of course that slows me down on production." Intelligent and conscientious, she won rapid promotion in the firm and became supervisor of a small number of other girls. She went on to say: "The girls were inexperienced, and it got so that I was doing all the work. I tried to do it all myself. I was too efficient for my own good. I would do the work after hours and take it home with me. Finally it got to be too much for me. I'm sensitive. I was worrying about everything and I couldn't stand it, so I quit." A girl who wants everything done just right may have trouble delegating work to others. Certainly she is under specially heavy strain in a firm like the one LoPresti worked for. Not only does the firm put her under pressure, but she puts it on herself. Cash posting allowed LoPresti to do everything right without being under pressure, and she liked it: "You have nothing to worry about. You do your work and that's that. I worry about a lot of things. Am I normal, you must be asking yourself? Well, *am* I normal?"—Interviewer: "Don't be silly." (Giggle from both.)—LoPresti: "I don't want to get into a spot like I was in at ———." (Note the interviewer's non-directive technique.) LoPresti has since been promoted in the company.

The High Producer. I could never develop any subtle social or psychological theory to account for the behavior of Dorothy Murphy. For me, she simply had a high activity

rate: she had the highest output among the posters, and she also talked more than anyone else in the room. Her interview was the longest: I had to stop it so that she could take her "relief" period. She was never late. A stocky girl, she never, unlike her nearest rival, gave the slightest appearance of making an effort to work fast, and she herself felt that if she concentrated she did not do so well. It may be significant that she reported a very energetic mother, active in association work, and a father who probably, as production manager of a factory, had a better job than the fathers of the other cash posters. She was easily intelligent enough to go to college. Both her brothers had gone, and her family could have afforded it, but she did not want to. And yet she cannot have been without ambition. Although she liked her present job, she was the only poster who had formally applied for transfer to some other division. She has since transferred to a division where the chances for advancement were greater than they were in ours, and as a result this very effective girl has moved higher in the company than any of the former cash posters.

The Popular Girl. Ann Coughlin received most sociometric choices from other cash posters and tied with Burke in total choices received. In other respects her record was not remarkable. She talked often but not very often; her output was neither low nor high—and this fact itself may be significant. Unlike Murphy, she had wanted to go to college, but her family could not afford it. She can best be described as a sweetheart—strong in all the less sophisticated and more familial virtues. She stands in sharp contrast to the social isolate, and she was the only girl who said, "I *love* my job." She has since left the company to get married.

I have tried to describe a small group of working girls—a study clinical in intent but employing some systematic observations of work effectiveness and social organization. I have described the attitudes of the girls toward a job that was highly repetitive, done without restriction of output or pressure for production from supervision. The analysis of social organization brought out again some familiar generalizations. Finally, I have tried to describe certain constellations of traits in individual behavior, related to work effectiveness, to social position in the group and outside, and to the worker's past history, that may prove suggestive to other researchers. In conclusion, let me express the hope that the kind of research described here will not be wholly abandoned in favor of more macroscopic investigations.

GROUP NORMS AND THE ACTIVE MINORITY *

JAMES G. MARCH
Carnegie Institute of Technology

As has frequently been observed, one of the most characteristic features of life in voluntary social organizations is the emergence within the organization of an active minority that operates as a leadership group.[1] Consequently, recent research attention in the several disciplines that are directly concerned with organizational behavior has been directed to an examination of the active minority, its characteristics and its influence position.[2] At the same time, there

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[1] See B. Barber, "Participation and Mass Apathy in Associations" in A. W. Gouldner (ed.), *Studies in Leadership,* New York: 1950, p. 484; R. Michels, *Political Parties,* Glencoe: 1949 (first printed in 1915), pp. 365–408; G. Strauss and L. R. Sayles, "Patterns of Participation in Local Unions," *Industrial and Labor Relations Review,* 6 (1952), pp. 31–43; D. B. Truman, *The Governmental Process,* New York: 1951, pp. 139–155.

[2] For a sample, see K. Chowdhry and T. M. Newcomb, "The Relative Abilities of Leaders and Non-Leaders to Estimate Opinions of Their Own Groups," *Journal of Abnormal and Social Psychology,* 47 (1952), pp. 51–57; R. Lippitt, N.

has been an expansion of research aimed at an exploration of the impact of group norms upon individual behavior.[3]

The analysis reported in this paper has two goals: (1) To test a basic hypothesis concerning the relationship between group norms and the active minority by using data from a local League of Women Voters organization. (2) To utilize the same data to suggest a beginning to a theory of group-approval functions.

A recurrent proposition in the literature of group research identifies a tendency toward fulfillment of group norms as a differentiating characteristic of the active minority. In their classic study of the Bank Wiring Room at Western Electric, Roethlisberger and Dickson assembled information on (among other things) the work norms of the group, the actual production and activities of the individual members of the group, and the structure of leadership and friendship within the group.[4] Among the workers, 6,000 connections was considered to represent a reasonable work load for a single day. Individual production varied substantially around that norm, but the individuals who consistently came closest to satisfying this (and other) norms were found to rank high in the group (according to sociometric indices).

Homans formulated these observations into the hypothesis that "the higher the rank of a person within a group, the more nearly his activities conform to the norms of the group."[5] He found further support for the hypothesis in the research of Whyte and Newcomb. Whyte, in his study of a street gang, frequently noted that the leader of the gang and his lieutenants fulfilled their obligations with much greater regularity than did the persons of lesser status within the group. In a group that valued skill at bowling and *Realpolitik*, the leaders were the best bowlers and the toughest politicians.[6] Newcomb's study of attitudes and leadership in a college community indicated that in a group distinguished by, and cognizant of, its radical reputation, leadership was closely related to the degree of radicalism.[7]

More recently, Mathews has shown how relatively slight differences between the attitudes of party representatives in the United States Senate in 1949 were accentuated by the choice of leaders. Senate Democratic leaders were found to be more "Democratic" than the Democrats in the Senate as a whole, and Senate Republican leaders more "Republican" than the Republicans in the Senate as a whole.[8]

PROCEDURES

In connection with a study of husband-wife interaction over political issues in the spring of 1953,[9] an opportunity was offered to test the Homans hypothesis, using a local League of Women Voters organization in an eastern suburban town. The goal was to examine, by means of a written questionnaire, the extent of key norm-satisfaction exhibited by the more active members of the organization as contrasted with the less active.

A random sample of 50 was chosen from

Polansky, S. Rosen, "The Dynamics of Power," *Human Relations*, 5 (1952), pp. 37–64; J. B. McConaughy, "Certain Personality Factors of State Legislators in South Carolina," *American Political Science Review*, 44 (1950), pp. 897–903; P. H. Mussen and A. B. Wysznski, "Personality and Political Participation," *Human Relations*, 5 (1952), pp. 65–82; R. M. Stogdill, "Leadership, Membership, and Organization," *Psychological Bulletin*, 47 (1950), pp. 1–14. See also the RADIR studies on elites.

[3] L. Festinger, "Wish, Expectations, and Group Standards as Factors Influencing Level of Aspiration," *Journal of Abnormal and Social Psychology*, 37 (1942), pp. 184–200; F. E. Hartung, "Common and Discrete Group Values," *Journal of Social Psychology*, 38 (1953), pp. 3–22; H. H. Kelley and E. H. Volkart, "The Resistance to Change of Group-Anchored Attitudes," *American Sociological Review*, 17 (1952), pp. 453–465; S. A. Stouffer, "An Analysis of Conflicting Social Norms," *American Sociological Review*, 14 (1949), pp. 707–717; S. A. Stouffer and J. Toby, "Role Conflict and Personality," *American Journal of Sociology*, 56 (1951), pp. 395–406.

[4] F. J. Roethlisberger and W. J. Dickson, *Management and the Worker*, Cambridge: 1939, pp. 412–423.

[5] G. C. Homans, *The Human Group*, New York: 1950, p. 141.

[6] W. F. Whyte, *Street Corner Society*, Chicago: 1943, p. 259.

[7] T. M. Newcomb, *Personality and Social Change*, New York: 1943, pp. 65–73.

[8] D. R. Matthews, *United States Senators: A Study of the Recruitment of Political Leaders*, unpublished Ph.D. dissertation, Princeton, 1953.

[9] J. G. March, "Husband-Wife Interaction over Political Issues," *Public Opinion Quarterly*, 17 (1953), No. 4.

a universe consisting of the 169 married members of the local organization. After an introduction in the organizational bulletin and with the aid of follow-up letters, a total of 32 members of the sample completed the questionnaire. Seven others returned the questionnaire uncompleted, indicating explicitly that they were too inactive in the League to feel competent to answer. One member of the sample had moved; the remaining ten did not respond.

Clearly, the sample of completed questionnaires was biased in the direction of overrepresenting the more active members of the organization; but, as will be indicated below, it was possible to correct this bias by means of an activity scale and the weighting of the least active group. Moreover, for most purposes reported here, a sample stratified by activity was desired rather than a completely random one.

According to the hypothesis previously advanced, whatever characteristics distinguished the group as a whole from the community would also distinguish the active members of the organization from the inactive. Thus, we would expect that if the League as a whole were more radical than the community, the active members within the League would be more radical than the inactive members. To test the hypothesis, four characteristics that differentiated the group from the community were identified.

First, it seemed reasonable to assume one basic feature of the League group from its very nature. That feature was the relative independence of League members from the political attitudes of their husbands. Specifically it was assumed, without explicit proof, that if one asked the women of the community to list the individuals with whom they would wish to talk before making up their minds on a series of political issues, the League members would be significantly less likely to list their husbands than would other women.

In addition, it was established on the basis of questionnaire responses that the League members were better educated, had higher incomes, and were less likely to be Republican than the bulk of the community from which they were drawn. The median number of years of formal education was 16; the median annual family income was 8,000 dollars, and the percentage of the total membership that voted for Eisenhower for President in 1952 was 45.[10]

On this basis, it was predicted that the more active members of the organization would tend to have higher annual incomes, to be better educated, to feel more politically independent of their husbands, and to be less Republican than the less active members. No distinction was made between attitude variables (such as political independence, or Republicanism) and "performance" variables (education, income and the like). Groups define their requirements either in terms of conformity of opinion or in terms of achievement, and the literature has dealt with both types of norm. Although there are some interesting hypotheses that might be tested with regard to differences between the two, no attempt has been made to do so here.

To examine the predictions, it was necessary to secure a means of ranking the members of the organization according to activity. For this purpose a Guttman scale was developed from four questions on the extent of participation in League activities. The four criteria and their contributions to the scale are indicated below:

Criteria	Scale Types				
	0	1	2	3	4
1. Attended two or more of last six group meetings.	No	Yes	Yes	Yes	Yes
2. Distributed League handbills, testified before, or attended a meeting of an agency of the government under League auspices	No	No	Yes	Yes	Yes
3. Attended (as a committee member) one or more of the last five meetings of any League committee	No	No	No	Yes	Yes
4. Been an officer or director of the League in the last two years	No	No	No	No	Yes

[10] The Community as a whole voted 66 per cent for Eisenhower. The League voting figures are adjusted to accommodate the bias introduced by the failure of some of the less active members to reply to the questionnaire. The actual figure for Eisenhower supporters among the 32 respondents was 34 per cent. Lest this be considered an "egg-head" phenomenon, it may be stated that Dewey, in 1948, did no better among these league members.

The scale types were numbered from a least active 0 (No, No, No, No) to a most active 4 (Yes, Yes, Yes, Yes), and the coefficient of reproductibility of the responses was .95.[11] The distribution among the five scale types within the sample of 32 was

Scale Type 0:	12
1:	7
2:	6
3:	4
4:	3.

Assuming that the 17 questionnaires that were not completed would have fallen into Scale Type 0, we can make the estimate that approximately 60 per cent of the members took virtually no part in the organization's activities. The primary interest in this study, however, is not in the relative size of the active minority and the inactive majority but in their characteristics from the point of view of the extent to which they satisfy the norms of the group, and for this purpose no assumptions need be made about the non-respondents.

For purposes of analysis, the sample was dichotomized into one group of 13 "Active" members (Scale Types 2–4) and a second group of 19 "Inactive" members (Scale Types 0–1). This dichotomization forms the basis for the measurement of the activity variable in the findings reported below.

FINDINGS

Each respondent was asked to indicate the annual income of her family. As has already been indicated, the median income for the entire group was found to be 8,000 dollars. The median for the more active group was 9,000 dollars, for the less active group—7,000. The indicated differences in median value are not statistically significant, and there is no difference in the form of the income distribution within the two subgroups.[12]

A similar equality with regard to the median value of the number of years of formal education is found. For both the active members and the inactive members the median age is the same—16 years. However, there are significant differences in dispersion between the two groups. Table 1

TABLE 1. NUMBER OF YEARS OF FORMAL EDUCATION OF ACTIVE AND INACTIVE MEMBERS

	Years of Formal Education		
	14–18	Less Than 14 or More Than 18	
Active members	13	0	13
Inactive members	12	6	18*
	25	6	31*

* There is no information on one inactive member.

indicates the number of relatively active and relatively inactive members who deviated more than two years from the median (those who had less than two years of college or more than two years of post-graduate study). Whereas none of the active members had more than 18 years of formal education or less than 14, one-third of the inactive members fell into one or the other of those extremes. The probability of this difference occurring by chance is .03.[13]

The felt political independence of the organization members was evaluated by responses in three places on the questionnaire where it would have been possible to indicate husband's influence. Three attitude questions were asked (one concerning the Taft-Hartley Act, one concerning the United Nations, one concerning local government). After each, the following question was asked:

> "Before you finally made up your mind on this question, whose opinion would you want to know? Identify, by describing their rela-

[11] Menzel has suggested a refined coefficient for judging the scalability. H. Menzel, "A New Coefficient for Scalogram Analysis," *Public Opinion Quarterly*, 17 (1953), pp. 268–280. The present scale has a Menzel coefficient of .74, well above the apparent level of acceptability.

[12] The test for significance is a run test. See F. Swed and C. Eisenhart, "Tables for Testing the Randomness of Grouping in a Sequence of Alternatives," *Annals of Mathematical Statistics*, 14 (1943), pp. 66–87. In the present case, the .025 and .975 limits are 9 and 20 runs respectively. Since the number of runs in the case of income is 15, there is no reason to reject the null hypothesis of randomness.

[13] The probabilities are computed exactly from the contingency table. See P. R. Rider, *Introduction to Modern Statistical Methods*, New York: 1939, p. 114. The run test used in the case of incomes is inapplicable here because of the frequency of ties in the values. In addition, it is less appropriate for testing dispersion alone where equality of central value can be assumed.

tionship to you (for example, 'brother,' 'neighbor,' 'radio announcer'), the three persons whose opinions you would value most highly *on this issue.* Be sure that each of the individuals you list is an actual person whom you can name, not a hypothetical person."

The question was open-ended, the object being to avoid suggesting the husband as a possibility in order to record the extent of spontaneous perception of the desirability of husband consultation. Since this question was posed three times, there were three opportunities for each respondent to record "husband" as an answer.

Table 2 indicates the number of active and inactive members who indicated a desire to seek the opinion of their husbands on any of the three questions. Whereas only 38 per cent of the active members recorded "husband" as a response to at least one of the questions, 68 per cent of the inactive members did so.

TABLE 2. SPONTANEOUS PERCEPTION OF THE DESIRABILITIY OF HUSBAND CONSULTATION AMONG ACTIVE AND INACTIVE MEMBERS

	Husband's Opinion Desired		
	Yes	No	
Active members	5	8	13
Inactive members	13	6	19
	18	14	32

Similarly, when the distribution of responses to the question of party support in the 1952 Presidential election are compared (Table 3), it is found that 53 per cent of the inactive members voted Republican, but only 23 per cent of the active members did so.

TABLE 3. PARTY OF PREFERENCE IN THE 1952 PRESIDENTIAL ELECTION AMONG ACTIVE AND INACTIVE MEMBERS

	Party of Preference		
	Republican	Other	
Active members	3	10	13
Inactive members	10	9	19
	13	19	32

Since the responses summarized in Table 2 and Table 3 were found to be independent (chi-square equals approximately .02), it was possible to combine them into a single comparison of political traits in active and inactive members. Since the group as a whole was less Republican and less likely to seek the opinion of their husbands on political questions, we can treat these as characteristics differentiating the group from the community—or group norms—and examine the null hypothesis that there is no difference between the extent to which the political traits of active members on the one hand and inactive members of the other support the political norms of the group. Table 4 combines Table 2 and Table 3 in this way.

TABLE 4. SUPPORT OF GROUP POLITICAL NORMS BY ACTIVE AND INACTIVE MEMBERS

	Group Political Norms		
	Support	Non-Support	
Traits of active members	18	8	26
Traits of inactive members	15	23	38
	33	31	64

The indicated differences between the traits of active and inactive members are significant at the .05 level of significance by the chi-square test of independence (chi-square=4.44). Consequently, we can reject the null hypothesis that the support of group political norms is independent of the activity of the member.[14]

DISCUSSION

Earlier in this paper it was predicted that the active members of this organization would (as a group) be better educated, have higher incomes, be less Republican, and feel

[14] Independently (and apparently simultaneously) McWilliams found, in two other League of Women Voters organizations, that the "more involved" members were significantly more likely to be "politically minded" than the less involved, but that this was not true in a non-politically oriented group such as a local Eagles organization. It is noteworthy that the McWilliams index of member involvement is based upon a series of items testing the same types of activities as the present activity scale. See R. O. McWilliams, *A Study of the Relationship of Political Behavior to Social Group Membership,* unpublished Ph.D. dissertation, University of Michigan, 1953, especially Chapter 4.

more independent of their husbands than would the inactive members (as a group). These predictions were based upon the observation that all of these characteristics distinguished the organization as a whole from the remainder of the community from which it was drawn and, consequently, could be considered to be norms of the organization.

The data presented above indicate support for the hypothesis with regard to the political attitudes (party affiliation and political independence) of the group, but do not appear to support the specific hypotheses with regard to education and income. In the case of income, there appears to be no difference either of central value or in the form of the distribution of family incomes among the active members and the inactive members. The data on education, on the other hand, indicate that although there is no difference in the median amount of education in the two subgroups, there is a significant difference in dispersion.

These results suggests that we should examine our conception of the characteristics of a group norm and the form of the function relating group approval to a variable valued by the group.[15] The hypotheses that were originally outlined appear to have been based upon a conception of a norm as an *unattainable-ideal*. In such a norm, group approval is pictured as a monotonically-increasing continuous function of an individual characteristic. Figure 1 indicates roughly

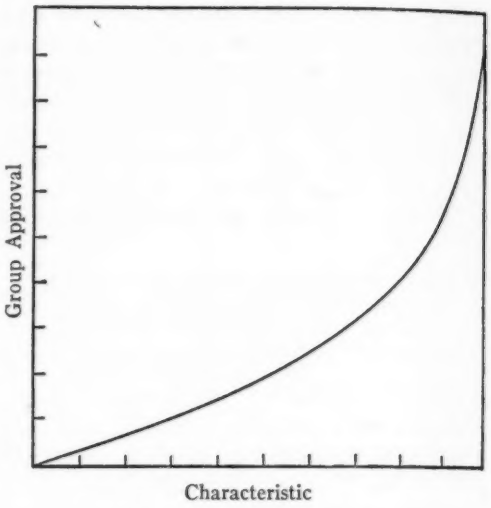

FIGURE 1. An unattainable-ideal norm.

the type of function underlying such a prediction.[16]

Athough it is difficult to classify with certainty a norm as one of this type, we can recognize certain varieties of individual characteristics that in some groups approximate this model of a norm. Thus, the faster a man can run, the more acceptance and approval he is likely to secure from a group of track enthusiasts; the more saintly a man is, the greater will be the approval of a priestly group; the more brilliant a man is, the more approval he will gain in an academic group. The data in each of these cases are limited and (at least in the latter

[15] We consider two major mechanisms by which members of a voluntary group such as the one studied here become distinguished in terms of activity, either one or both of which can be utilized to explain the relationship between group norms and the active minority. On the one hand, there is self-selection. Within certain limits, one can become as active as one wants to become in the League of Women Voters group studied here. The usual complaint is not that there are too many persons seeking to be leaders but too few. Since we would predict that the intensity of the desire to be active in a group is a function of the extent of congruence between individual and group norms, self-selection could be used to explain the basic Homans hypothesis. This is particularly true when (as in this case) differences in available leisure time among the members do not appear to make significant contribution to the recorded differences in activity. At the same time, self-selection is supplemented by, and partly dependent upon, group-selection. On the one hand, the group participates in the determination of activity through the choice of formal leaders. On the other hand, it is doubtful whether many group members would react to an attitude of group disapproval with a desire to be active in the group, or having such a desire, would maintain it in the face of such an attitude. In view of this hypothesized high (but not perfect) correlation between self-selection and group-selection, it is possible to utilize the data on activity and norms to explore tentatively the relationship between individual characteristics valued by the group and group approval.

[16] The approximate nature of the figure should be emphasized. Since the only restrictions on the function are that it be continuous and have a positive slope at every point, there are a considerable number of quite different functions that would satisfy the definition. Note also that this represents a partialling out of only that part of group approval that is related to a given characteristic. The complete group approval function would have to account for all of the group norms and their relative importance. These general remarks also apply to the remainder of the discussion.

example) we may have some reservations about so describing the group norms involved, but at least in some circumstances this is a valid model. In the case of the League of Women Voters group studied, the data on political attitudes are consistent with the unattainable-ideal model; although, as is suggested below, it may also be described—and perhaps more correctly—in terms of a special case of another model.

A second model of a group-approval function seems to be indicated by the data presented above on educational level and activity within the League of Women Voters organization. Instead of thinking of a norm as an unattainable-ideal, we can conceive it to be a *preferred-value*. In this case, deviations from the norm are measured in both directions rather than in just one as in the previous model. Group approval can be represented as a continuous function, monotonically-increasing up to the preferred-value and thereafter monotonically decreasing. Figure 2 indicates the form of this type of norm.

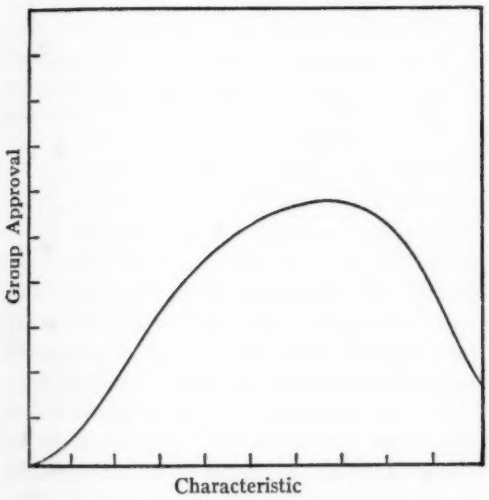

FIGURE 2. A Preferred-value Norm.

In the organization studied here, the average deviation from the median number of years of formal education was more than twice as large among the inactive members than it was among the active members; and the frequency of deviations of more than two years from the median of 16 was significantly greater among the actives than among the inactives (see Table 1). Similarly, the Roethlisberger and Dickson studies indicated that deviations on both sides of the work norms were disvalued. Both findings would fit the preferred-value model.

In addition, some norms that are manifestly of the unattainable-ideal type may be basically a segmentation of the preferred-value norm in which the range of values that have been achieved are all less than the preferred-value. Thus in the League organization, there is some evidence from personal conversations with members that there may be a limit to the extent of "un-Republicanism" to be positively valued. And in Newcomb's Bennington study, it is not clear whether there was some limit beyond which one lost favor by becoming more radical.

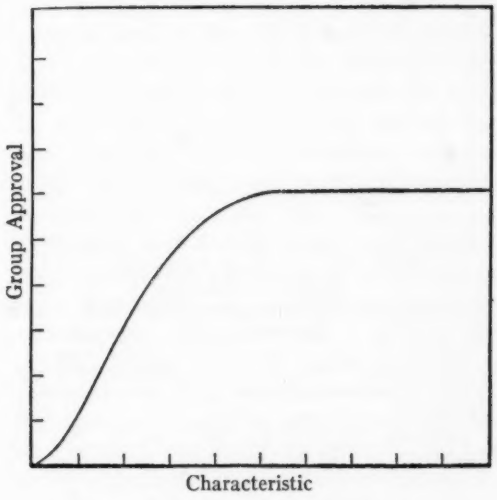

FIGURE 3. An attainable-ideal norm.

A third type of norm that seems important enough to be mentioned is one that can be called an *attainable-ideal*. Here the group-approval function is defined to be continuous and monotonically-increasing up to a point and constant thereafter, such as in Figure 3.

Consider a football team in possession of the ball on the opponents' twenty-yard line. A halfback at this point will gain approval as a function of the distance he can carry the ball before being tackled. In general, the farther he runs, the more approval he will gain; but after twenty yards, the approval function is a constant. The halfback is no greater a hero if he runs twenty-five yards than he is if he runs twenty-one.

None of the norms examined above in the case of the League of Women Voters group appear to fit this model, but *a priori* it is of sufficient importance for inclusion as a major type of norm function.

All three of the above models have been defined by continuous functions; but there is no reason to assume that all group-approval functions will, in fact, be continuous. The most striking discontinuities are those associated with membership criteria. In the local League studied here, although age is apparently not related to activity within the group, no one under the age of twenty-one is a member. In effect, we have a two-step attainable-ideal function with a discontinuity at age twenty-one.

The three basic norm types constitute a beginning to a theory of norms. It is possible, for example, to describe the education norm of the League of Women Voters group in these terms.[17] In Table 1 it was indicated that the inactive members were more likely to deviate more than two years from the median number of years of formal education than were the active members. In Table 5 more complete information on deviations is provided. It can be seen that the differences between the two subgroups are concentrated in the "more than 2" category. This suggests that there is a range of tolerance around the education norm and that the group-approval function would basically be of the preferred-value type with considerable flattening around the norm. In addition, no one in the sample had less than 12 years of formal education. This suggests that the function should show a constant low value up to the 12 year mark and a discontinuity at that point.

TABLE 5. DEVIATION FROM MEDIAN NUMBER OF YEARS OF EDUCATION BY ACTIVE AND INACTIVE MEMBERS

	Number of Years of Deviation				
	0	1	2	More Than 2	
Active members	5	5	3	0	13
Inactive members	5	5	2	6	18*
	10	10	5	6	31*

* There is no information on one inactive member.

Since the information on political attitudes is dichotomized into attribute data, it is not feasible to propose a picture of the relevant norms involved. It has already been suggested that they may be best represented as a segment of a preferred-value norm, but the values that are assumed by the independent variable are thus far defined only in terms of attribute possession and group percentages. Further analysis is not practicable with the present data.

SUMMARY AND CONCLUSIONS

The hypothesis that the more active members of an organization will tend to exhibit a higher degree of conformity to group norms than will the less active members has been tested in a local League of Women Voters organization. General support for the hypothesis has been revealed, but the failure of specific hypotheses has motivated a consideration of the theory of norms. Three models of group-approval functions have been presented and discussed representing an unattainable-ideal norm, a preferred-value norm, and an attainable-ideal norm.

In the judgment of the present writer, this type of theoretical formulation in the examination of group norms has considerable advantage over the attempt to deal with the concept of a norm without a conception of the characteristics of the group-approval function. For example, it can be used fruitfully in the study of role conflict. Consider the probable outcome of a conflict of roles involving sharply peaked preferred-value group norms as contrasted with the probable outcome where the function is relatively flat.[18]

In addition, it should be observed that when attention is focused upon the desirability of defining group-approval functions,

[17] From this point, the writer is assuming what was originally to be proved (i.e., that the active members fulfill group norms to a greater extent than do inactive members). Nonetheless, the exercise has some merit.

[18] See S. A. Stouffer, "An Analysis of Conflicting Social Norms," *American Sociological Review*, 14 (1949), pp. 707–717, especially the closing paragraph.

there is a simultaneous suggestion of the need for developing techniques for doing so. How do we measure group approval? To what extent can group-approval functions be defined in such a way as to exhibit stability over time? Do group norms exist that cannot be portrayed in the two-dimensional space utilized in the models suggested here? If such norms exist, what type of conceptual model can fruitfully be applied in their analysis? These are some of the unanswered questions that have high priority in the possible further development of a theory of group-approval functions.

ORIENTATION AND ROLE IN THE SMALL GROUP *

MICHAEL S. OLMSTED
Smith College

THE present study was designed to investigate the effects of different group orientations or norms on the structure and functioning of *ad hoc* four-man discussion groups. Its purpose was to study certain variables, which there is reason to believe are crucial in large-scale social systems, in a setting which could to some extent be experimentally controlled. The attempt was made to study the groups in such a way that comparisons could be made between large- and small-scale social systems, that is, the study was conceived in terms of a general sociological point of view, deriving in large part from Parsons, rather than as a study of small groups thought of as being unique sociological phenomena and as being understandable quite aside from any orderly comprehension of the properties of social systems generally. It is an underlying contention of this paper that the point of view adopted proved to be a fruitful one and that at least some of the more abstract formulations of what has been called "the theory of action" can prove useful in close empirical research.

Since the emphasis in the original study was on the analysis of a system of interaction rather than on the quantification of relationships between a few precisely demarcated variables, the attempt was made to secure various kinds of data and to use several different levels of analysis. The present paper reflects this approach in its division into four main sections and in its emphasis on the significance of the various kinds of data rather than on the weightiness of any particular set of figures. The author has chosen to spend relatively more space developing what he takes to be the important implications of the findings and relatively less space in breaking down summaries into rawer data.[1]

THE RESEARCH DESIGN

The fundamental assumptions of the experiment may be stated very briefly. It assumed: (1) that the interaction of the small group under analysis constituted a system which had properties which to some degree were regular and predictable; (2) that the system could be seen as a structure which was made up of roles—these roles, however inchoate they might be, were worth searching out and analyzing in order to give a better understanding of group process; (3) that one component of action was the set of value-orientations or norms obtaining in the small scale social system and that these value-orientations could be manipulated experimentally with results that would be relevant to our understanding of action systems generally.

More specifically, the actual experiment may be outlined as follows: twenty-four four-man groups made up of volunteers from a university population were observed under special conditions which involved recording apparatus and a one-way screen. These groups were *ad hoc:* the members had not

* Paper read at the annual meeting of the American Sociological Society, September, 1954.

[1] The more complete picture is presented in the author's "Small Group Interaction as a Function of Group Norms," unpublished doctoral dissertation, Harvard University, 1952.

known each other prior to the experiment, and their deliberations, in two 20 minute sessions, revolved around two artificial, experimentally created, problems.[2] Before any given group began to interact it was instructed by a set of directions designed to induce one or another of two orientations. Thus one half of the total twenty-four groups was oriented in one way, the other half in the other way. In theoretical terms, the first of these orientations, hereinafter referred to as "X orientation," was defined in terms of the pattern variables[3] of Affectivity, Collectivity Orientation, Particularism, Ascription, and Diffuseness. The other, herein after referred to as "Y orientation," was defined in terms of the pattern variables: Affective Neutrality, Collectivity Orientation, Universalism, Achievement, and Specificity. Roughly speaking, we may think of the former (X) orientation as *gemeinschaftlich* or process-oriented and the latter (Y) orientation as *gesellschaftlich* or task-oriented.

After being introduced to each other and to the experimental situation (including the fact that they would be observed) the four subjects were told that the purpose of the experiment was to test group performance where the members had the advantage of preliminary knowledge of how to solve group problems. They were told that previous studies had shown that there was a good way and a bad way to go about problem-solving and that they were to have the opportunity of capitalizing on this scientific[4] knowledge. Half the groups were then presented with the following advice, stated as scientific principle rather than mere pejorative and emphasizing the *gemeinschaftlich* virtues:

> . . . In these more successful groups (mentioned as having been studied previously) members realized that they were faced with more than just a problem to be done—they were faced with a situation where a *group* is working together to do something. In these best groups, the responsibility of each member was not limited to giving his own piece of information and letting it go at that; he saw to it that the other members were satisfied . . . the standards in terms of which they guided themselves and evaluated their progress were essentially internal standards, that is, they were standards of personal satisfaction. Some groups . . . tried to be formal and coldly efficient—to calculate every step in terms of some abstract principle of efficiency —but they ended up practically not speaking to each other . . . they tended to think of the other person in highly abstract terms, as simply another computing machine so to speak, rather than as a human being. . . . If some one individual could perform, give answers, and so forth, that was all that counted for them. They did not appear to realize that the very fact of being in the same group made them a part of a team, a team in which everyone ought to be given his place regardless of how quick or adept he happened to be at certain specific and technical sorts of things. . . .

The other twelve groups were given parallel but dissimilar directions, as follows:

> . . . The best groups seemed to know enough not to get involved with personalities: they did a solid, business-like job with each individual playing the part he could play best . . . these groups had objective standards of efficiency and their evaluations—their respect for each other—depended on what an individual could do and did not rest on preconceived ideas or prejudices. They did not let personal feelings of likes and dislikes get in their way. . . . Some groups, who came out at the bottom of our quality and productivity curve, used to get off the track by turning the meeting into a social affair where everybody had a nice time reminiscing and telling their personal feelings but nobody accomplished anything. . . . The difference between this latter type of group and the efficient groups can be summed up, perhaps, as

[2] One of these problems was a kind of board game played jointly by the subjects with the experimenter as opponent; the other problem required that the group rank a series of paintings in order of group preference and to make up a story based on the paintings. Although the problems were independent variables in the experiment and brought into being rather different patterns of interaction, this aspect of the experiment will not be discussed in this article.

[3] See Talcott Parsons and Edward Shils, *Toward a General Theory of Action*, Cambridge: Harvard University Press, 1951, pp. 80–84.

[4] Actually pseudo-knowledge, since the studies mentioned to the groups as proving the value of certain problem-solving methods were fictitious. The fact that the "lessons" supposedly derived from the fictitious studies were contradictory in the two cases (X and Y) did not prevent them from having considerable plausibility. This fact in turn is a commentary on the disorganized state of our knowledge about small group behavior.

the difference between a girls' dormitory bull-session and a technical or scientific conference: the best groups realized they had a *job* to do and they went about it in a business-like way.

THE CONCEPTION OF GROUP PROCESS

In its barest essentials, the fundamental conception of group process employed in this research is as follows: The problem-solving small group faces an internal and an external situation, the latter being the task which they undertake (not the physical environment nor the experimenter as such) and the former being the relations among members which must be ordered and arranged to make possible, or at least facilitate, the solution of the task. The internal problem should not necessarily be conceived, however, as merely a *means* to the solution of the outer or external problem—the relations of persons may be, or may become, ends in themselves.[5] This in turn may result in a neglect of or reinterpretation of the external or task situation. In the solution of the external problem or even in the balancing of emphases to be accorded to external and internal matters, certain processes are essential, processes which Bales has defined as the "functional problems" of communication, evaluation, decision, control, tension reduction, and reintegration.[6] The first three of these relate to the process of arriving at decisions; the last three relate to the social-emotional implications of coordinated group effort. They imply, that is, that coordination to achieve a common end involves restriction and frustration of some needs (psychological needs such as self-esteem, dominance, and the like) of some members, and that these potentially disruptive "personal feelings" must be dealt with in one way or another: by repression, by suppression, through catharsis, sublimation, projection, and such means.[7]

The conception is, furthermore, that the activity or communication devoted to the solution (including the denial) of the various internal and external problems is distributed in time and among persons. The former assumption underlies the "phase hypothesis" of Bales and Strodtbeck referred to below. The latter assumption implies that members will contribute differently to the solution of these problems and that insofar as these differences are stable they may be referred to as roles. The development of stability and the corresponding emergence of roles is predicated on the notion that stability fulfills rather important functions. Originating in what are in the present context random factors of personality, differentiation in kind and amount of activity comes to serve a useful purpose in the group,[8] not only in terms of conscious task efficiency but also in terms of reducing the problematic nature of the information system ("reducing the noise in the circuits" to borrow some terminology from cybernetics) and of increasing the accuracy with which members can predict when, how, and why other members are going to behave. Group members thus come to have roles which involve both very loose prescriptions and proscriptions in behavior and also special relationships to the external situation.

It should be quite clear that the role in the present small group situation is not the same thing as the one found in the large scale social system. In the latter context

[5] Cf. Helen Jennings, "The Sociometric Differentiation of the Psychegroup and the Sociogroup," *Sociometry*, X (1947).

[6] Cf. Robert F. Bales, *Interaction Process Analysis*, Cambridge: Addison-Wesley Press, 1950. In a recent article Parsons has suggested a revision or modification of this list of prerequisites of problem-solving. Bales' phrasing has been retained here because it involves somewhat fewer assumptions and manipulations of abstractions for purposes not directly relevant to the present context. Cf. Talcott Parsons, "Some Comments on the State of the General Theory of Action," *American Sociological Review*, 18 (December, 1953), p. 625.

[7] Since the group situation is conceived of as structurally analogous to the intrapersonal situation, the borrowing of these "psychological mechanisms" from psychoanalysis is held to be legitimate. It is the opinion of the present writer that the failure to take into account in any systematic fashion the implications of coordination and its resulting frustration is a serious deficiency in the Group Dynamics or Field Theory approach. The notion of "barriers to communication" is a feeble substitute for this omission.

[8] That is, differentiation becomes "functionally autonomous." As Weber and others have pointed out, a thing may continue for other reasons than it began. In general formulation: the function of an element in a system may vary with the state of that system, or, as temporally conceived, with its stage of development.

we have a recognition by the actor and by others of the obligations, both duties and restraints, involved in a role. Though perhaps not ordinarily labelled as such (for example, the sick role) there is a definition, an institutionalization of roles, which goes beyond anything found in the small group.[9] It was one of the aims of the present experiment to see if a particular kind of problem-solving group would evolve its own system of roles and to see the antecedents and the consequences of this evolution. The procedure seemed to be preferable to ignoring the concept altogether, or to thinking up all the kinds of roles which might possibly be involved and then leaving these unsupported by any systematic analysis of the data.[10]

DESCRIPTION OF GROUP BEHAVIOR

The X groups in their approach to their problems tended to be cautious, hesitant, and somewhat nervous. While there was more convivial behavior and less disagreement in the beginning phase than there was among the Y groups, this appeared to be an attempt to create *bonhomie* by sheer will power, that is, it seemed to be a reflection or expression of the recently induced particularistic norms rather than a true expression of satisfaction with themselves as a group. The attempt to be warm contrasts with the seriousness with which the Y groups set to work, and while this difference in tone was most noticeable at the beginning there continued to be a difference along these lines throughout the session.

As the problem session wore on, the X groups tended to become somewhat more serious and analytical with more intense discussion of the problem they faced. This change is not just the passing of an artificially created euphoric stage but represents something more interesting, namely, a shyness about facing up to the functional problems of decision and control. Rather than moving on to the taking of positive action, either in ranking a picture or in making a move in the board game, X groups had a tendency to retreat back to further analysis and evaluation. This concern with orientation seemed to be a fairly successful device for integrating the group by giving it something on which the members could pretty well agree. This procedure focused attention on a target which was outside the group, thereby relieving self-consciousness about whether they were being sufficiently harmonious, and also providing them with the opportunity of acting as they felt they were supposed to act, that is, to express agreement and therewith solidarity.[11]

The concept which best seems to summarize these and other findings may be termed "anxiety over process." The X orientation focuses attention on the social system of the group as such. It focuses attention on how members behave toward one another, that is, on the process of interaction. Interaction, then, is an end in itself and not just a means to some external end. Any threat to this process becomes, insofar as the orientation is internalized, a threat to the individual who is a member of the group. It follows then that anyone making a contribution to the process, whether it solves the group's external task or not, is at least helping to solve the internal problem, since after all, "it's better that something be said than that communication break down altogether." We would expect, following this line of argument, that leadership and volume output tend to be more closely associated in X than in Y groups. As intimated, anxiety over process seemed to play a less important part in the case of the twelve Y groups. They tended to be more sober and analytical all the way through. They tended to face up to the functional problem of decision more quickly than did the X groups and seldom tried to avoid the necessity of positive action through extensive conjecturing.

The relation of the internal and the external problems is a subtle and complex one. A well-functioning group must pay

[9] It is not, of course, the size which is crucial but the *ad hoc* and limited nature of the experimental group. A small group of three or even two persons may involve extremely well institutionalized roles, as in the family.

[10] As for instance in Kenneth Benne and Paul Sheats, "Functional Roles of Group Members," *Journal of Social Issues*, IV (1948) where some twenty-seven possible roles are enumerated.

[11] Compare the discussion of "Rallying Topics" in Ch. VIII of Florence Powdermaker and Jerome Frank, *Group Psychotherapy*, Cambridge: Harvard University Press, 1953.

attention to both and in the simultaneous or alternating solution of these problems something more than a simple feed-back arrangement may be involved. Otto Neurath has used the metaphor of a leaky boat to describe the development of mathematics: you stand on the dry end of the boat while repairing the leaky end and then move to the formerly submerged but now dry part to repair the section on which you formerly stood. Group process seems to go this one better; while supposedly repairing one part of the system, members may actually be doing a more important job of repair elsewhere. In terms of the present experiment, for instance, while a group is presumably devoting itself to a scientific analysis of an objective phenomenon (by careful descriptions and abstract figuring of possibilities) it may actually be dealing successfully (or unsuccessfully, to be sure) with internal problems of integration of sentiments and leadership. It is not just that success abroad makes for satisfaction at home but that failure abroad may bring about the same satisfactory result since the external activity was only a temporary form for the solution of the internal problem.

The interrelationship may also work in the reverse fashion, of course, with the solution of the external problem being facilitated by attention to the internal problem. Indeed, the emphasis on this latter direction of influence has become almost a matter of dogma among certain group relations enthusiasts.

One practical implication which seems to emerge from this very brief discussion of the relationship between internal and external problems is that the best way to deal with a problem may not be to attack it head on but rather to undermine it.[12] There has been a tendency in certain quarters to feel that if a group is to be made solidary (an end which is assumed as given) then the question of solidarity should be raised early and late. Without claiming that the bits of evidence cited above disprove the premises on which such an approach is based, they do serve to remind us of what we should have known all along: that in some circumstances there are things better left unsaid.[13]

[12] Aesop's fable of the wind and the sun presents a much better metaphor.

INTERACTION PROCESS ANALYSIS DATA

The interaction among the four members of each of the twenty-four groups was scored by Bales' method. The resulting data—some 15,000 unit scorings for the total sample—may be used in a number of ways. They may be grouped so as to show: (1) how activity was quantitatively distributed among members—who spoke the most, the least, etc.; (2) how activity was qualitatively distributed among the twelve categories (or, more grossly, the four areas) which comprise the scoring scale; and (3) how activity was distributed over time. Finally, combinations of groupings may be employed to show, for instance, what kinds of activity a person of given output rank produced during a certain period of time. Anything approaching a full treatment of the data along these lines is impossible in this paper; certain findings, however, may be cited for their illustrative value and because they reflect differences between X and Y groups.

In any group, we may feel sure, some members will talk more and some will talk less. What might not be quite so obvious, however, is whether there will be a greater range or degree of (quantitative) differentiation, on the average, between the top and bottom men in the groups where X norms obtain or in the groups where Y norms prevail. One might plausibly expect any of the three possible results: that there is no difference (because the norms are not influential), that the Y groups show greater differentiation (because they are more competitive and because the *gemeinschaftlich* X groups would have more solidary and equalitarian relations), or that the X groups show greater differentiation. In the present sample the latter was found to be the case: in difference in percentage of total group output the top-bottom range for the X groups averaged 24.4, while for the Y groups this

[13] The conception of equilibrium which is implicit in these remarks, and which underlies the whole conception of this study, is dealt with most fully in Bales' paper, "The Equilibrium Problem in Small Groups," in Talcott Parsons, Robert F. Bales, and Edward Shils, *Working Papers in the Theory of Action*, Glencoe: The Free Press, 1952.

gap averaged 18.5 (significant by one-tailed t test at the .05 level). Examination of the X groups reveals that the difference in mean differentiation in output is due primarily to the gap between the man who ranks first in output and the others rather than an averaged greater gap. The fact that the most talkative member under X conditions "holds the floor" to a greater extent than his analogue in the Y groups suggests that there may be something in the ways in which the groups operate and the norms by which they operate which permits, and perhaps encourages, this relatively greater monopoly of group attention. In other words, *Gemeinschaft* does not imply equality with respect to output. We shall consider the implications of this point again below.

Looking at between-member differentiation (differences between a composite highest in output and a composite lowest) through time, we find that differentiation is not only greater for the X groups but also more stable through time. For the X groups there was significantly less tendency for members to "get out of line": the man who talks most, or least, or somewhere in between on the basis of an overall count tends to be in the same relative position during any given phase (or third of the meeting time), his position being less subject to usurpation than is the case in the Y groups. In terms of quantity of output, then, there is more jockeying for position in the Y groups and this jockeying tends to keep up while in the X groups it tends to decline with time. These X-Y differences suggest that differing attitudes are taken by members of X and Y groups toward the process of interaction itself. The X groups tended to accept the *status quo* with its initial inherent differentiation of persons more than did the Y groups. That the *gemeinschaftlich* orientation influences people to accept a more stable and more hierarchical social organization or rank ordering of members in output (and also intake, though that cannot be discussed here) is, obviously, not demonstrated but something along this line is an inviting deduction, especially as it has analogies in larger scale social systems.

Using another combined grouping of data, we may ask whether quantitatively distinguished members are qualitatively distinguished also. Do those who talk most produce the same kind of communication, only more of it, as those who talk less, or is there something which might be called "the dynamics of rank position" which would influence the big talkers to act different from the small talkers? The answer to the latter question seems to be, yes. With respect to the giving of suggestion, opinion, and orientation (area B, categories 4, 5 and 6 on Bales' scale) the top output men in both X and Y groups were found to be somewhat *under* the group average in this area.[14] That is to say, they distributed their activity into more areas, varying the kinds of things they said more than did the lower ranking men. Insofar as this pattern indicates a concern with all the potential aspects of the interaction process, it might be suggested that the top output man is acting in a way in which, it has often been said, a leader acts. Whether "output means leadership" is a question that must await further evidence.

In area C ("asks for orientation, opinion, suggestion") the highest men for all groups taken collectively show more activity. Output "leaders," that is, ask more questions both absolutely and relatively than do "followers."

[14] This statement and the other propositions in this paragraph about relative frequency or amount of activity raise some very thorny problems which cannot be dealt with here. The statements are based on a rather involved paradigm of what relations might logically be expected to exist among group members if the "dynamics of rank position" were "thought away." A paradigm was felt to be necessary in order to take into account the fact that, for instance, the smallest talker has more to respond *to* with yeas and nays, questions, etc. than does the biggest talker. For further discussion of this problem see Olmsted, *op. cit.*, Ch. VI, Sect. A. Bales and his colleagues have been working on other versions of a paradigm which would, similarly, provide a framework for statements of more and less. See his "The Equilibrium Problem in Small Groups" in *Working Papers in the Theory of Action*, *op. cit.*, p. 134ff. Presumably because of the differences between his paradigm and the one employed here, the conclusions as to the kind of activity initiated by members of the various output ranks also are different. For instance, Bales finds that top output men engage in more activity in area B (*ibid.*, p. 130) while the present writer concludes that though this is quantitatively so, it is not so when speaking relative to other group members.

With respect to positive responses (area A—"shows solidarity, shows tension release or joking, agrees") those men in both X and Y groups who ranked second in total output showed the highest relative amounts of activity, while with respect to negative responses (area D—"disagrees, shows tension, shows antagonism") output is, even in relative terms, in accord with total output rank. It will be noted that most of the above propositions do not state a difference between X and Y group findings. Such differences were present but they were either too slight or involve too much by way of explanation to be discussed here.

As regards the distribution of activity through time, something has already been said in connection with the problem of stability of rank position. It should also be noted that the data from the present twenty-four groups bear out the "phase hypothesis" set forth by Bales and Strodtbeck.[15]

[15] Robert F. Bales and Fred L. Strodtbeck, "Phases in Group Problem-Solving," *Journal of Abnormal and Social Psychology*, XLVI (October, 1951). The phase movement hypothesis states that the activity of small problem-solving groups is temporally patterned in a certain way relative to the basic functional problems of interaction. It holds that the first phase contains a relative predominance of *orienting* communication, the second phase a relative predominance of *evaluative* communication, and the third phase a relative predominance of *directing* communication. Cf. also, Olmsted, *op. cit.*, Ch. V, Sec. A, 2.

It might also be noted that another hypothesis by Bales and his coworkers (Robert F. Bales, Fred L. Strodtbeck, Theodore M. Mills, and Mary E. Roseborough, "Channels of Communication in Small Groups," *American Sociological Review*, XVI (August, 1951) was supported, *viz.* that which states that a member tends to give activity to other members in proportion to the output rank of the receivers and that a member tends to receive activity from others in proportion to the output rank of the initiators. This was found to be true for four-man groups as it was for the six-man groups studied by Bales *et al.* In the four-man Y groups communication tended to be somewhat more evenly distributed among all possible initiator-receiver channels while the X group members tended to use some channels and neglect others to a greater extent.

With regard to the percentage of a member's activity addressed to "All" (the group as a whole) there was also rough agreement with the findings of Bales *et al.* For four-man groups the percentage to All for the four output ranks were (in order of total output) 46.8, 42.5, 40.5, and 40.3. Cf. Olmsted, *op. cit.*, Ch. VI, Sec. B. The corresponding figures for the six-man groups were 61.8, 30.3, 24.5, 28.8, 28, and 31.2.

THE ANALYSIS OF ROLES

The questionnaire which was given to the participants in the experiment after the group session was over was designed to elicit information on several types of roles. Two of these roles are defined by the ratings given by group members to one another with respect to two dimensions which may be labeled "Facts" and "Harmony." The relevant part of the questionnaire read as follows:

> 3. In any discussion group it is very likely that certain persons contribute more in some ways while other persons may contribute more in other ways. Considering the two problems as wholes, we would like you to evaluate the members of the group (including yourself) with respect to:
>
> (A) how much this person contributed in the way of specific or technical information and suggestions for the solutions of the problems, and
>
> (B) how much this person contributed toward keeping the group coordinated and working harmoniously.
>
> Please indicate your judgment of an individual's contribution in the first respect (A) by marking a horizontal line on the left hand scale—marked (A)—under each member below. Indicate your judgment in the second respect (B) by marking on the right hand scale—marked (B)—under each member.
>
> The two estimates may be the same or they may be different. It may not be easy for you to recall just what role each person played, but we would appreciate your trying to be as accurate as possible.

A third set of "roles" is defined in terms of sociometric choice in answer to the questions, "With which member of the group did you feel you had most in common, i.e. with whom would you probably get along best if the group were to continue? With whom did you have the least in common?"

Figure 1 shows the relation between output rank and estimated contribution of Facts and estimated contribution of Harmony. The major conclusion to be drawn from this chart is that for the X groups the output hierarchy corresponds to the rating hierarchies much more completely than for the

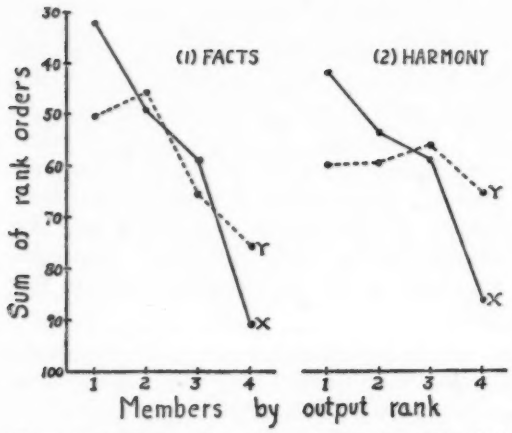

FIGURE 1. Summed rank orders* in estimated contribution of (1) facts and (2) harmony for group members arranged by output rank; X and Y groups.

*Where 1 is the highest rank and 4 is the lowest rank in each group on each problem, so that a summed rank of 24 represents the highest possible rank and a summed rank of 96 represents the lowest rank.

Y groups. In the Y groups, for instance, there seems to be no association whatsoever between how much a man says and how much his colleagues think he is contributing to the harmony of the group, while in the X groups output seems to be positively associated with estimated contribution of Harmony and even more so with estimated contribution of Facts. It would appear that we have here a rather interesting phenomenon, one which seems to be the consequence of the two different types of orienting instructions; we may refer to the phenomenon as "the comparative fusion of hierarchies."

The psychological consequences [16] of what was read to a group at its inception may be said to have been, for the X groups as compared to the Y groups, a failure to focus on, and a blunting of discriminations between, different kinds of behavior and of functional problems, and a less analytical attitude which makes it less likely that members will conceive of the complex of interaction as being divisible into component parts. Furthermore, the X groups seem to exhibit more of what has been called "anxiety over process." The person who does the most to "carry on" in a situation which is potentially embarrassing and uncomfortable—insofar as the process of interaction itself threatens to grind to a halt—that person is, in a diffuse sense, the "leader." Leadership is a term which seems to include several different attributes or may be defined in several different ways; this fact emerges more clearly in the case of the Y than of the X groups, presumably because of the tendency in the latter to obscure potential distinctions because of and in the name of norms of solidarity.

(a) *Sociometric Data.* If the number of positive (and negative) sociometric choices accruing to individuals of various output ranks are added up for the twelve X and the twelve Y groups we can get some picture of the relationship between how much a person talks and how much his listeners like him. Within the limits imposed by the crudity of the questions, the smallness of the sample and of the differences obtaining, the findings are interesting even though not statistically significant. As will be seen from Figure 2, the most talkative man (a composite fiction, it will be remembered) is not the most popular man, in either the X or the Y cases. Assuming that this result calls for explanation

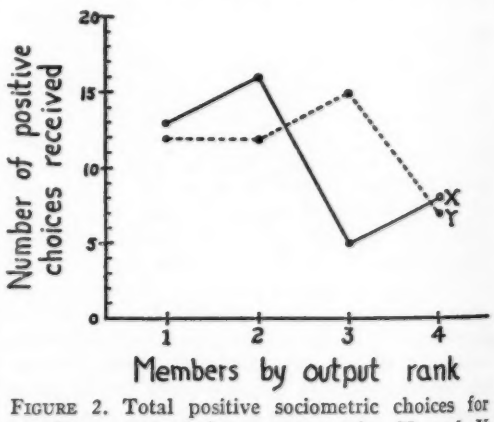

FIGURE 2. Total positive sociometric choices for members arranged by output rank; X and Y groups.

[16] As an example of *unanticipated* psychological consequences it may be noted that the release of hedonic impulses (such as the X norms, in part, imply) may arouse the threat of insufficiency of these impulses and this threat may in turn prove so overwhelming as to lead to a recession of goals. Cf. Martha Wolfenstein, "The Emergence of Fun Morality," *Journal of Social Issues*, VIII (1951), wherein the author deals with the threat engendered by the prescription of fun morality: ". . . if you aren't having fun there must be something wrong with you." This conception of the fear of insufficiency is clearly related to the notion of anxiety over process described above.

and is not a consequence of chance variation, the explanation which Bales has offered [17] in connection with similar findings in his groups seems to apply here. The top ranking man in output, by taking a larger share of what is by its very nature limited (i.e. time) tends to incur the hostility of others.[18] In a very general sense the person who talks tends to be better liked than the person who does not, but this does not seem to be a linear relationship of, "the more talking, the more liking." Hostility against the member who is felt to be directing most and thereby infringing on others' prerogatives and independence is enough to bend the curve at its upper end. For another thing, the man who talks most or is most active in dealing with the external problem, implies, by the very fact of his activity, a criticism of other group members. His activity implies that the *status quo* is not sufficient or acceptable, that what others are doing to further group goals is in some way in need of revision or improvement. As a prodder-into-action the most active person is perhaps the most respected but as far as being liked is concerned he has at least one strike against him.

But are these arguments not contradictory to the anxiety over process hypothesis advanced earlier? Indeed so, but the differences between X and the Y groups seem to reconcile the two principles. For the more competitive Y groups, the sensitivity to direction by others and the hostility that accompanies it, has "pushed" the "Most Liked" label down to the third ranking person, while in the X groups the hypothesized anxiety over process has pushed the title up to the second ranking person. The reverse of this phenomenon is observable in the analogous arrangement of negative sociometric choices (not presented here).

One general conclusion which may be drawn from these data—one which is scarcely new—is that authority and affective relationships tend to be antithetical. The person who is seen as the primary organizer and director of activity, who tends to define, interpret, guide and circumscribe the activity of others is not likely to be the person who is liked best by other members of the group. Not the initiator and director of activity but someone whose authority (if any) is less direct tends to be the one toward whom others can feel a greater warmth of affect.[19] Whatever esteem or respect members might feel toward the man who took up a plurality of the time by talking the most, the positive affect, as measured in sociometric choices, seems to have gone to a member in a less commanding position.

(b) *Projected Hostility.* The previous discussion of tendencies toward dissociation between authority and affect is based, fundamentally, on the notion that the coordination of persons in group effort implies the disciplining of the kind of individual needs for gratification that we often label as "personal feelings." In group conditions, then, we would expect hostile impulses (though not necessarily hostility) to arise, impulses which might threaten the continued coordination of group activity if they were not dealt with in some fashion. The alternative ways of dealing with such impulses, the conditions under which one or another is

[17] See R. F. Bales, "The Equilibrium Problem in Small Groups," *loc. cit.*, p. 146ff. His similar results add somewhat to the assurance with which the present data may be accepted.

[18] "And therefore if any two men desire the same thing, which neverthelesse they cannot both enjoy, they become enemies. . . ." Hobbes, *Leviathan*, Part I, Ch. 13.

[19] The dissociation of respect and affection has received attention in various quarters. Anthropologists have often noted that one male elder may have an authority role requiring respect and another may have a more permissive role allowing affection. In patrilineal societies the former role is usually held by the father and the latter by the mother's brother; in matrilineal societies the situation is customarily reversed. Cf. A. R. Radcliffe-Brown, "The Mother's Brother in South Africa," *Structure and Function in Primitive Society*, London: Cohen and West, 1949. Also George Murdock, *Social Structure*, New York: Macmillan, 1949; George Homans, *The Human Group*, New York: Harcourt, Brace, 1950, p. 116 and *passim*. Clinical psychology has also dealt with this problem and the special conditions imposed by the isolated conjugal family. Political scientists have often contrasted the British and American forms of government with regard to the dissociation institutionalized in the former and the fusion of the two attitudes in the latter. This point was noted at least as long ago as Walter Bagehot's *The English Constitution* (1867). This whole problem of the relation of instrumental and affective roles in the small group context is discussed with characteristic lucidity by Bales in his "The Equilibrium Problem in Small Groups," *loc. cit.*

chosen, and the consequences of their employment is a major and largely unexplored area in the small group field.[20]

There is one very incomplete source of data on these problems from the present experiment. During the group sessions a "Projected Hostility Index" was compiled by the observer. This Index was simply a record of the number of times that the various members "wise-cracked" or made a derogatory remark about the *subject matter* of the group discussion.

One might expect that the data on projected hostility when grouped according to output, Fact, and Harmony rank would show that those at the bottom of the variously defined heaps would exhibit the highest scores. Such a hypothesis, that deprivation breeds resentment and those most deprived (of time and respect) would be most inclined to project their resentment, has a wide and loose currency in our psychologistic age. The data, which for purposes of argument we may treat as meaningful, do not support any such conception as the one very crudely outlined above. Very generally speaking, projected hostility tends to be associated with superordinate rather than with subordinate position. This may be interpreted as follows: Objectively, the speakers are speakers for the group and function so as to express sentiments of aggression and derision arising from the frustration which is engendered by the strains and tensions of coordinating group effort so as to achieve a group product. In the *gemeinschaftlich* situation, where there tends to be a greater consensus about leadership (a greater "fusion of hierarchies"), the expressive function tends to devolve more upon one man who is the one who has a higher Projected Hostility Index. In the X groups there is also a somewhat greater amount of projection (107 instances as opposed to 87 in the Y groups). This is viewing the situation objectively and presupposes that there is a group need which requires fulfilling and that there are certain pressures deriving from the nature of the social system which induce those in leadership positions to serve this symbolic function.[21] Viewed subjectively, it is suggested that those members who recognize their superordinate position tend to feel a sense of potency (which in analogy with the larger social system, may be said to characterize upper strata generally), involving freedom to indulge in potentially offensive remarks which the quiet members are not so likely to feel.[22] Such remarks probably both help to build a superordinate position and are also dependent on the position in the sense that what is humorous and tension-relieving when said by a leader can be merely churlish or inane when said by a follower.

(c) *Leadership.* Finally, a brief comment may be offered on the question of leadership. In the view of the present writer leadership activity may be defined as activity devoted to the functional problems faced by the group. These problems may be grouped into two rough categories: external (task) problems and internal (social-emotional) problems. The former type of problem and the activity requisite for its solution has tended to receive somewhat more attention

[20] Freud's emphasis on libidinal ties with the leader as the essential characteristic of group life, whatever its inadequacy as a theory of social structure, at least had the virtue of recognizing the psychological forces operating in the group context. Certainly he was right in seeing that devotion to a leader was *one way* of overcoming the centrifugal forces of group life. Cf. *Group Psychology and the Analysis of the Ego,* London: Hogarth Press, 1948. For an interesting and too little appreciated example of how Freud's ideas have been carried forward, see Fritz Redl, "Group Emotion and Leadership," *Psychiatry,* V (November, 1942).

[21] Some 67 years ago Nietzsche formulated this situation in terms of the resentment of slaves toward their masters and of the role of the ascetic priest in diverting the course of resentment: "Getting rid of the blasting-stuff [resentment] in such a way that it does not blow up the herd and the herdsman, that is his [the ascetic priest's] real feat, his supreme utility. . . . The priest is the diverter of the course of resentment." Friedrich Nietzsche, *The Genealogy of Morals,* Essay III, "What is the Meaning of Ascetic Ideals?"

[22] Kelley has reported a roughly similar finding with regard to the perquisites of high status: "High status seems to give the occupants greater freedom to express whatever criticism they feel of the other level directly to the criticized persons rather than [only] to one's own level." Harold Kelley, "Communication in Experimentally Created Hierarchies" in Leon Festinger *et al., Theory and Experiment in Social Communication,* Research Center for Group Dynamics, Institute for Social Research, University of Michigan, Ann Arbor, 1950, p. 116.

than the latter,[23] largely, we may suppose, because the variables involved are more easily recognized and isolated for investigation.[24]

The solution of the internal problems requires activity whose nature cannot be fully spelled out at this stage. The promotion of solidarity and consensus (or perhaps, on occasion, their disruption) is one way of formulating the chief social-emotional problem, and the integration of sentiments through symbolization is perhaps one major technique of this promotion. In terms of individuals, the man who symbolizes this sort of group goal has a claim to leadership in the same way as the most active man or the man who has the most good ideas has a claim. If an individual has the power to symbolize the effective reality of a set of beliefs concerning what is true and proper and serves as a living demonstration that what is held to be desirable is in fact possible, insofar as these things are accomplished it would seem to be legitimate to say that a real function is being performed and that a real problem is being met.

[23] In a study by Arthur Couch and Launor Carter it was found that observers in judging leadership and its attributes tended to think in terms of the aggressiveness and initiative of the leader in the solution of the group tasks and not in terms of his role in "Group Sociability" (i.e. "Striving for group acceptance, cooperation, and adaptability . . . representing a friendly interpersonal pattern of behavior towards the group."). Cf. Launor F. Carter, "Leadership and Small Group Behavior" in Muzafer Sherif and M. O. Wilson, *Group Relations at the Crossroads,* New York: Harper and Bros., 1953, p. 269.

[24] While future research may try to even up the balance, so to speak, it is the conviction of the present writer that this can profitably be done only in terms of a conception of the problem-solving group as a system which is concerned with *both* internal and external problems. To study one sort of phenomenon without attention to, or even any very coherent notions about, the other sort is as though a student of music were to concern himself only with high notes, leaving the low ones for another researcher.

CONCLUSION

This has been a summary report on an experimental study of problem-solving small groups designed to show the effects of different value-orientations on small group interaction. The most fundamental assumption of this study was that even *ad hoc* four-man groups may be studied in terms of a conception of the social system which is derived from more macroscopic analysis. It is the belief of the author that the assumption was fully justified and that there is evidence to show that many of the same principles and considerations apply to both large scale and small scale interactive systems.

THE BEHAVIOR OF SMALL GROUPS UNDER THE STRESS CONDITIONS OF "SURVIVAL"

E. Paul Torrance *
Survival Research Field Unit

The research project described in this paper is a part of a program of research designed to develop a "psychology of survival." "Survival" as used in this project means "to live where others would die" and is specifically concerned with survival problems of Air Force personnel forced down over enemy territory. The specific purpose of the project described in this paper is to develop concepts concerning group functioning under survival conditions which might be useful in training combat air crews to behave effectively under the stress of survival situations.

A variety of methods has been used and a series of studies is under way. Methodologically, these studies include: A survey of the relevant literature,[1] the analysis of survival experiences taken from interviews with men

* The author is indebted to Dr. Alvin F. Zander of the Research Center for Group Dynamics of the University of Michigan for his critical reading of this paper and for his helpful suggestions.

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[1] E. P. Torrance, *The Psychological Aspects of Survival: A Survey of the Literature,* HFORL Report No. 35. Washington: HFORL, 1953.

who have been downed in enemy territory, and laboratory and field experiments. Some of the studies concerned with small group behavior include: group decision making, organization for survival, perception of group functioning, status relationships, fear, conflict, and "set."

PROCEDURES

In the present study, approximately 200 interviews were conducted with Air Force personnel who had been downed over enemy territory during World War II or over Korea during the present conflict. All interviews with World War II survivors (about 75) and a few of the Korean survivors (about 10) were conducted by HFORL staff members. The remainder were conducted by intelligence officers. In a few cases, the accounts of all members of the group were available; in some, however, the account of only one member was available.

Approximately 1,000 critical incidents were abstracted and analyzed to develop hypotheses concerning effective and ineffective functioning under actual survival conditions which might be worth further study. These hypotheses were then tested against the total accounts of the survival experience.

SOME CONCEPTS REGARDING GROUP FUNCTIONING UNDER SURVIVAL CONDITIONS

The Unstructured Nature of the Survival Situation. Experimentation with other types of groups has demonstrated the importance of clarity of structure.[2] In survival, two broad types of clarity of structure are involved: structure of the field (i.e., paths to survival) and structure of the group. Structure of the field refers to the degree of clarity or unclarity to which paths will lead to the goal of survival. Group structure refers to the degree to which certain patterns of interdependencies or linkages have been stabilized.

Combat flyers are accustomed to functioning in relatively structured situations in which both the goal and group structures are well defined. Each individual has been given, or has taken over, certain functions. These functions to a large extent automatically define the frequency and kind of interaction they will have with each other. Out of these interactions, certain linkage patterns become differentiated or "set."

When a survival situation arises, however, unusual problems occur which the usual goal and group structures may be quite inappropriate to handle. Members do not know what they must do in order to survive nor who should do what. Adequate clarity, then, must be achieved in order for the group to survive.

STRUCTURE OF THE FIELD

Two general types of behavior detrimental to survival were found to result from lack of clarity of the situation. One was a random, trial and error type of behavior. The other was the development of a feeling of hopelessness which usually led to surrender to the enemy.

Frequently, unclarity of structure results from a failure of the aircraft commander or other member of the crew to keep all of the members briefed regarding happenings. When the aircraft commander kept up a running account during the entire in-flight emergency, crew members stated that this helped them to keep calm and to know what to do in order to survive. When crew members were not kept briefed, individuals have been known to bail out when there was no need to bail out, to fail to bail out when it was necessary to bail out, and to exhibit other panic reactions.

In some cases, however, the situation is so ambiguous that structuring is difficult. Such situations require analysis and group problem-solving.

Survivor group behavior shows that relief and behavior of increased survival value results when the structure of the situation becomes clear. This is dramatically illustrated in the story of one survivor in Korea. He and other members of his group were suffering from injuries and other ailments and were feeling rather hopeless. One night he chanced to see a searchlight which revealed the location of the front. He then started planning his escape and forgot his "miseries."

[2] A. R. Cohen and A. F. Zander, "The Effects of Clarity of the Job and Confidence in One's Self on the Reactions of Telephone Operators" (dittoed paper). Ann Arbor: Research Center for Group Dynamics, University of Michigan, 1953.

Having a common goal is a force which helps to hold a group together in a survival emergency. Survivors describe many types of cooperative action, including such things as shifting roles in the aircraft when a member is wounded, giving first aid under attack, calming panicky members, stimulating one another to unusual resourcefulness, setting up a guard while others sleep, and the like.

When individual members lose their goal-orientation, it is frequently the operation of the group's goal-orientation and the common danger that saves them. In one such incident, a bombardier during his crew's survival attempt wanted to quit, but the aircraft commander drew his gun on him and told him that he would shoot him rather than leave him behind. The bombardier, thinking that he would, got up and went along. The escape of the whole group was linked together and his remaining behind threatened the lives of the entire group.

In some cases, however, it is the individual's goal-orientation that must salvage the group's goal-orientation. Howard, in his analysis of survival experiences in the Southwest Pacific in World War II, found that the group may serve as a barrier in overcoming food prejudices.[3] The barrier against eating strange foods usually had to be broken by some individual saying that he would rather eat the particular food than to starve.

GROUP STRUCTURE

It appears that the capacity of a group to survive depends in no small part upon its skill in organizing its efforts. This conclusion finds support in laboratory research such as that of French in which marked differences were found between organized and unorganized groups when subjected to fear-producing stimuli.[4] Unorganized groups showed more signs of disintegration than did organized groups. A common danger is not adequate to weld together members of a group. Panic may also result when competition rather than cooperation arises in the emergency; and, when everyone is uncertain, a movement on the part of one individual tips the scales in the direction of the same action. These phenomena have been studied in laboratory experiments by Mintz[5] and by Sherif and Harvey.[6]

Feelings of liking or disliking between group members have been given much attention by psychologists. Although incidents of inter-personal hostility occur in survival, incidents of the opposite type predominate. Individuals crowd together or continually pound one another to keep warm. While parachuting, they count the other parachutes descending and try to identify fellow crewmen. There is also an unwritten code that injured crewmen will be bailed out by the uninjured. When this does not occur, it is probably due to weak affectional linkages.

When the inevitable feelings of hostility are recognized during an extended survival attempt, positive action is usually taken and little damage results. Failure to recognize such feelings have been fatal.

Another important factor in group structure is authority or power. In the bomber crew, the aircraft commander is the member of the crew with the greatest power. An analysis of the survival experiences of bomber crews indicates that if this power is not assumed properly the crew's chances of survival are greatly endangered.

A number of special survival problems surrounds the status position of the aircraft commander. Considerable evidence has been found to substantiate the findings of Polansky, Lippitt, and Redl that individuals with high group prestige more frequently initiate behavioral contagion.[7]

In one crew, the navigator became panicky but looked up and saw that the aircraft commander and the pilot were still in their seats doing their jobs and he became calm. In another crew, a bombardier, who had a reputation of being unusually calm, looked

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[3] R. A. Howard, *999 Survived,* Maxwell Air Force Base, Alabama: Air University, 1950.

[4] J. R. P. French, Jr., "Organized and Unorganized Groups Under Fear and Frustration," in *Studies in Topological and Vector Psychology,* Iowa City: University of Iowa Press, 1944.

[5] A. Mintz, "Non-Adaptive Group Behavior," *Journal of Abnormal Social Psychology,* 46 (1953), pp. 150–159.

[6] M. Sherif and O. J. Harvey, "A Study in Ego Functioning: Elimination of Stable Anchorages in Individual and Group Situations," *Sociometry,* 15 (1952), pp. 272–305.

[7] N. Polansky, R. Lippitt, and F. Redl, "An Investigation of Behavioral Contagion in Groups," *Human Relations,* 4 (1950), pp. 319–348.

up and saw "horror written on the aircraft commander's face" and immediately became panicky.

Support is also found for Hurwitz, Zander and Hymovitch's finding that fewer communications will be directed to those individuals of the group with lower status.[8] It has been observed that those in the rear of the B-29, usually recognized as being of lower status, are sometimes not kept briefed during an in-flight emergency. In some cases, these individuals do not even receive the communication to bail out.

There is some evidence to indicate that when the power distance is great between an individual and the other members of the crew, those lower may not feel a responsibility toward him. In one account of an overwater bailout, a lieutenant colonel with the crew was observed after the "prepare to bail out" signal by four members of the crew to be sitting on his dinghy which was not fastened to his parachute. Not one of these four survivors mentioned calling this to the lieutenant colonel's attention. Evidently, they expected a lieutenant colonel to look out for himself. The lieutenant colonel was drowned.

In regular bomber crews, the power relations are fairly well defined, but in other types of groups this may not be clear. In one group, no one wanted to assume responsibility for any action, so an Air Force officer decided to attempt to lead the group, although he was not the senior officer. His leadership was accepted and everyone was greatly relieved. There is a general feeling among survivors that a controlled unit has a far better chance of survival and that someone should be designated as leader and that the group stick with its choice.

Almost every story of 100 per cent successful crew survival is characterized by excellent descriptions of good communications procedures during the in-flight emergency and the ensuing events. Stories in which there is panic and a high percentage of non-survivors are characterized either by the lack of such descriptions or by descriptions which give evidence of breakdowns of communications. In some accounts, no mention is even made of any order "to bail out."

Evidence indicates that having someone with whom to communicate in survival is essential to morale. One man panicked when he realized that he was the only man left in the plane. Another became panicky after he hit the ground and tried to find someone to whom he could surrender. When he found one of his fellow crew members, he continued his survival effort. A third wanted to talk with someone so badly that he surrendered. Many helicopter rescued flyers have described the calming effect of the voice of the helicopter pilot at a time when calm behavior was absolutely essential.

SUMMARY

The emergency situation of survival is one in which the structure of the field and the structure of the group possess a low degree of clarity.

Making a quick but adequate analysis of the situation, keeping all of the members of the crew briefed regarding happenings, and the maintenance of a goal orientation, are necessary in giving adequate clarity to the situation so that the men will know what must be done in order to survive.

The structure of the group may be affected in a number of areas. Each of these areas is a dimension of group structure (i.e., affect, communication, and power) on which a crew may have built a stable linkage pattern. Under stress, these linkages between members may become confused and thus people do not have a clear perception of what they can expect from one another, with whom they can relate, how they can relate to one another, and so on. The fact that this happens apparently influences the ability of the group to survive. Crew training and crew composition efforts should therefore be directed toward achieving a more stable group structure as well as developing more effective techniques for structuring the situation.

Failure of affectional linkages resulting in competition and disrupting hostility, a breakdown of group goal linkages resulting in immobilization of group action and excessive concern with individual ills rather than upon group locomotion, a lack of power linkages resulting in inability to reach group decisions and take necessary actions, and

[8] J. I. Hurwitz, A. F. Zander, and B. Hymovitch, "Some Effects of Power Among Group Members," *Human Relations,* in press.

breakdowns in communication are but a few of the symptoms of faulty group structure. Evidence of these should be identified in training and either corrected through training or appropriate changes should be made in crew composition.

Participation in the activities of a group under survival conditions calls for skills in individual behavior for which all members are not adequately equipped, leading to tension, ineffectiveness, panic and withdrawal from participation. Crew members differ in their abilities to modify their roles with changing demands. Crew members, through training in the simulated survival situation, need to be trained to diagnose required roles, to perform them, and to modify their roles as required by group functioning.

SOME FINDINGS RELEVANT TO THE GREAT MAN THEORY OF LEADERSHIP *

EDGAR F. BORGATTA, ROBERT F. BALES, AND ARTHUR S. COUCH
Russell Sage Foundation and Harvard University

A CENTRAL area of research and theory in social psychological science, particularly in group dynamics and small group research, is that of "leadership." The interest apparently lies in the expectation that the "effectiveness" of group performance is determined in large part by the leadership structure of the group. Effective performance is usually defined by the joint occurrence of high task accomplishment and high satisfaction of members of the group.

There are at least six types of thinking about the optimum leadership structure of the group for effective performance.[1] (1) The most effective group is the one which has the most adequate all-around leader ("great man"). (2) The most effective group is the one in which all members have been chosen according to ability for the specific task. (3) The most effective group is the

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[1] The classification of the six types represents our abstraction in this complex field. Thus each position may be represented without sufficient qualification. It is also probable that these positions may actually overlap in the thinking of various social scientists. Aspects of (1), the great man theory, will be found discussed in such different, recent sources as: F. Redl, "Group Emotion and Leadership," *Psychiatry,* 5 (November, 1942), pp. 573–596 and M. Weber, *The Theory of Social and Economic Organization,* New York: Oxford, 1947 (Chapter 3, the section on Charismatic Authority). The second theory (2) is probably that which underlies the situational concept of leadership. Sophisticated forms of this theory are found in: R. B. Cattell, "New Concepts for Measuring Leadership in Terms of Group Syntality," *Human Relations,* 4 (1951), pp. 161–184; and L. F. Carter, "Some Research on Leadership in Small Groups," in H. Guetzkow, *Groups, Leadership and Men,* Carnegie Press, 1951. The sociometric position (3) will be found considered in: J. L. Moreno, *Who Shall Survive?* Beacon, N. Y.: Beacon House, Inc., 1953; and Helen H. Jennings, *Leadership and Isolation,* New York: Longmans Green, 1950. The role differentiation theory (4) is considered in: E. Durkheim, *The Division of Labor in Society,* Glencoe, Ill.: The Free Press, 1947; and R. F. Bales and P. E. Slater, "Role Differentiation in Small Groups" (In press). The fifth (5) is usually implied in the theory that a group needs a "common culture base" in order to achieve adequate integration. At a general level, this theory underlies many of the clinical approaches, and it is evident in cultural anthropology. Such studies as those of national character also fit this theoretical position. See: A. Inkeles and D. Levinson, "National Character: The Study of Modal Personality and Sociocultural Systems," in G. Lindzey, *Handbook of Social Psychology,* Cambridge: Addison-Wesley Press, 1954. The personality compatibility theory (6) is considered in: W. Haythorn, A. S. Couch, P. Langham, D. Haefner and L. F. Carter, "A Study of the Behavior of the Authoritarian and Equalitarian Personalities" (forthcoming), and W. Schutz, "Construction of High Productivity Groups," *Studies in Group Behavior,* Medford, Mass: Tufts College, 1953. Several other theories of leadership presented themselves in our consideration but are not classed here. For example, there is a group-centered approach built around a concept of no leadership. It is clear that a classification of leadership types and group structure requires additional attention.

one in which members are selected on the basis of their sociometric choices of each other as co-workers. (4) The most effective group is the one in which the various qualities of task ability and social ability are distributed among the members to allow or encourage role differentiation and division of labor. (5) The most effective group is one in which members are similar in values or some critical area of values. (6) The most effective group is the one in which members are selected primarily on the basis of compatibility of personality characteristics, such as authoritarianism, major mechanisms of defense, ascendance-submission, and the like.

Our concern here is with exploring some aspects of the first principle which we arbitrarily call the "great man theory of leadership." This is probably the oldest of the six theories and one which has received attention throughout the centuries. Such attention is understandable when one considers that history is frequently written from the reference point of "great men." It is equally understandable in terms of the implicit ease with which manipulation is possible if the organizational performance is determined by the single person in the top position. Much psychological research, assuming the great man theory, has been oriented to the problems of selecting persons who are best fitted for a top position of leadership. However, tests of the great man theory which involve the performance of groups rather than the consistency of the leader's behavior are relatively absent in the literature.

Procedure. The data to be presented, bearing on the great man theory, are based on 166 sessions of three man groups.[2] The subjects (N = 126) were male enlisted Air Force personnel assigned to the research project on temporary duty. They were recruited from different organizations, and acquaintance was minimal. The purpose of the testing was represented to the subjects as being the observation of how small groups work together, and presumably, this observation was to take place when they did some role playing. However, they were also observed in periods during which they planned the role playing session and periods of informal participation. It is these data which are analyzed in this experiment. Each of these 166 sessions was 24 minutes long. Every person participated in four sessions with two new co-participants in each session. The differences in enlisted grade were controlled by assignment of subject to session with persons of their own status.

Design. Couch and Carter[3] have demonstrated in a factor analysis of the rated behavior of individuals in group interaction that three orthogonal factors account for the major portion of the variance in these ratings. The factors have been identified as: (1) *Group goal facilitation;* (2) *Individual prominence;* and (3) *Group sociability.* More simply, the factors may be identified as Task ability, Individual assertiveness, and Social acceptability. For this study, using the Couch and Carter experience, along with that accrued from other sources, we attempted to measure the factors as follows:

Factor I. *Task ability*—(a) leadership rating received from co-participants on a task criterion; (b) the I.Q. score as measured by the Science Research Associates Primary Mental Abilities.

Factor II. *Individual assertiveness*—the total activity rate of the individual in terms of the number of initiated acts per unit of time (using Bales' category system).[4]

[2] Other aspects of this research have been reported in other papers. Problems of reliability of scoring and consistency of subject performance were discussed in: E. F. Borgatta and R. F. Bales, "The Consistency of Subject Behavior and the Reliability of Scoring in Interaction Process Analysis," *American Sociological Review,* 18 (October, 1953), pp. 566–569. Problems concerning the effect of task differences of experience, and the "accumulation of a common culture" are discussed in: E. F. Borgatta and R. F. Bales, "Task and Accumulation of Experience as Factors in the Interaction of Small Groups," *Sociometry,* 16 (August, 1953), pp. 239–252. The effects of participation with various types of co-participants, and a rationale for reconstituting groups are presented in: E. F. Borgatta and R. F. Bales, "Interaction of Individuals in Reconstituted Groups," *Sociometry,* 16 (November, 1953), pp. 302–320. The relationships among sociometric measures, interaction performance, ratings by superiors, intelligence, and selected variables are discussed in: E. F. Borgatta, "Analysis of Social Interaction and Sociometric Perception," *Sociometry,* 17 (February, 1954), pp. 7–32.

[3] See: L. F. Carter, "Leadership and Small Group Behavior," in M. Sherif and M. O. Wilson, *Group Relations at the Crossroads,* New York: Harper, 1953.

[4] The observation system used was that of: R. F. Bales, *Interaction Process Analysis,* Cambridge: Addison-Wesley Press, 1950.

Factor III. *Social acceptability*—the sociometric popularity as determined by choices received on a criterion of "enjoyed participation with."

It is our notion that a *great man* would need to possess each of the three independent qualities to a substantial degree. With this *fusion of qualities* the great man is able to satisfy the major role demands and personality needs of group members. In this study, we have defined the great man in terms of a product of the four measures mentioned above. The product of the scores is used rather than a sum to emphasize the requirement of a *simultaneous* occurrence of the qualities. Some sample computations of the product index used are shown in Table 1.

TABLE 1. SOME SAMPLE FACTOR PRODUCT INDICES

Subject Identification (Ordered By Index)	Factor I Task Ability (a) Leadership	(b) I.Q. (Percentile)	Factor II Individual (c) Assertiveness	Factor III Social (d) Acceptability	Product Index (a)(b)(c)(d) (in 1,000's)
1	4	97	161	2	124.9
2	4	96	145	2	111.4
3	4	98	126	2	98.8
4	4	81	152	2	98.5
5	4	78	151	2	94.2
6	3	88	175	2	92.4
7	4	78	135	2	84.2
8	4	96	106	2	81.4
9	4	68	144	2	78.3
10	4	70	121	2	67.8
11	4	54	145	2	62.6
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.					
.					
102	1	4	117	2	0.9
103	3	2	94	1	0.6
104	1	4	46	2	0.4
105	1	1	99	2	0.2
106	0	8	75	0	0.0*
107	0	1	25	1	0.0
108	0	12	16	0	0.0
.					
.					
.					

* There were twenty-one persons with a product-index of 0.

Great men were selected on the basis of their performance in the first session. The top eleven such persons were chosen, each participating in a separate group. That is, there was no case of two great men together in a first session. Our choice of eleven persons was arbitrary and based on the assumption that only about the top tenth of the total sample would satisfy the criterion of "greatness." In the three subsequent sessions when two great men participated together, that three man group was eliminated from the sample; this reduced our number from 33 to 25. We did this because the term "great man group" implies a group with a *single* great man as all-around leader.

Before examining other hypotheses, a point of concern for this study is whether a person who performs as a great man in the first session does so by virtue of the particular composition of his group, or whether it is a function of relatively stable characteristics of his personality which determine his "greatness" in any group in which he participates. If there is no stability in performance, our subsequent hypotheses are meaningless.

We have no post-meeting estimates of productivity or satisfaction. However, we have indices of interaction in the group which have face validity as bearing on productivity and satisfaction.

(a) For the satisfactory performance of a group in relation to a complex or general

task, a large number of suggestions which are acceptable to the group must be made. An index which is a reasonable *a priori* estimate of this kind of task facilitation is the simultaneous presence of high rates of giving suggestion and showing agreement in the group as a whole. Again, for this index we use a product relationship so that both must be high in order for the index to be high. The total number of suggestions was multiplied by the total number of agreements (Bales' category 4 times category 3). This gives a rough measure of the degree to which a given group reaches consensus on proposed solutions to the task problem.

(b) A high rate of showing tension (Bales' category 11) is a fairly direct indication of difficulty in the interaction process. It is usually a sign of anxiety and withdrawal from participation by the individual. High rates of showing tension in the group are probably associated with low satisfaction, although the relationship may not be linear.

(c) An indication of a friendly atmosphere in a group is a high rate of interaction in the positive social emotional categories — showing solidarity and showing tension release. In this case, our measure is the sum of these (Bales' category 1 plus category 2), indicating the amount of warmth expressed in the group.

Hypotheses. Hypothesis (1). *Great men* will tend to remain *great men* over a series of sessions.

Hypothesis (2). Sessions in which *great men* participate will have a higher product rate of suggestion and agreement (index: time rate of giving suggestion times rate of giving agreement).

Hypothesis (3). Sessions in which *great men* participate will have lower time rates of showing tension than those in which they do not participate.

Hypothesis (4). Sessions in which *great men* participate will have higher time rates of showing solidarity and tension release than those in which they do not participate.

Results. Hypothesis (1). The top eleven persons (of a total sample of 123) defined by the product index of the first session were followed through the subsequent sessions, and the frequency with which they appeared within the top eleven ranks of the product index in the second, third and fourth sessions was noted. Of the eleven persons, eight were in the top ranks in the second and third sessions, and seven were still in top rank in the fourth session, which is a remarkably stable performance. This pattern, based on chi-square tests, is significant beyond .001 level. The hypothesis is emphatically supported.

The results of the remaining hypotheses are presented in Table 2.

TABLE 2. MEAN RATES OF INTERACTION FOR GREAT MAN GROUPS AND NON GREAT MAN GROUPS: IDENTIFICATION OF GREAT MEN BASED ON FIRST SESSION

	Session 1	Sessions 2, 3, 4
Product Rate of Giving Suggestion and Agreement:		
Great Man Groups	867 (N=11)	530 (N=25)
Non Great Man Groups	566 (N=31)	362 (N=95)
(value of t)	(5.98)*	(2.43)*
Rate of Showing Tension		
Great Man Groups	9.4 (N=11)	11.7 (N=25)
Non Great Man Groups	14.1 (N=31)	16.4 (N=95)
(value of t)	(1.41)	(1.79)*
Rate of Showing Solidarity and Tension Release		
Great Man Groups	39.6 (N=11)	28.6 (N=25)
Non Great Man Groups	19.7 (N=31)	22.2 (N=95)
(value of t)	(3.98)*	(1.65)*

* $\alpha \leq .05$, one-tail test.

Hypothesis (2). When the first sessions in which the great man participated were examined, it was found that they were significantly higher than the residual category of first sessions in terms of the product rate of agreement and suggestion. When subsequent sessions in which they participated were examined, it was found that the product index of agreement and suggestion for the sessions remained significantly higher than those in which the great men did not participate. The hypothesis is emphatically supported.

Hypothesis (3). Sessions from which great men were selected showed less tension than the residual first sessions as expected. The difference in the predicted direction was significant when subsequent sessions in which great men participated were compared to those in which they did not. The hypothesis is supported.

Hypothesis (4). When the first sessions in which great men participated were compared with the remaining first sessions with regard to amount of positive affect shown, it was found that the "great man" sessions were significantly higher. In the subsequent sessions, the difference remained significant. The hypothesis is emphatically supported.

Discussion. The stability with which great men, chosen on the basis of their first session performance, retain top position in subsequent groups is impressive. One is encouraged to believe that a single session may be adequate for the selection of great men.

To the extent that our hypotheses are supported, it is suggested that great men selected on the basis of their first session continue to have an influence on the relatively superior performance of the groups in which they subsequently participate.

The evidence is quite clear that those groups containing a great man have higher product-rates of giving suggestions and agreements. Insofar as one has any reason to believe that this is related to the quality of solutions, the "productivity" of these groups is likely to be increased relative to the groups without great men.

To the extent that a lack of showing tension is an indication of smooth functioning, groups with great men appear to show less inhibited response to the task situation with less anxiety and withdrawal from active participation. This may indicate greater satisfaction with the group. Further evidence of this is seen by the greater amount of positive social emotional behavior, reflecting friendly interpersonal relationships among the members of the group.

Thus, it may be said that great men tend to make "great groups" in the sense that both major factors of group performance—productivity and satisfaction of the members—are simultaneously increased.

Conclusion. In general, the great man principle of group composition appears to have much to recommend it. Further study[5] should focus on testing some of the underlying assumptions of the various principles of group composition, especially in terms of the differential effect of the leadership structures on group performance.

[5] A study is now in progress under the direction of Robert F. Bales in which groups composed according to the role differentiation principle will be compared with groups composed according to the great man rationale.

INTEGRATING FIELD WORK AND LABORATORY IN SMALL GROUP RESEARCH

MUZAFER SHERIF

University of Oklahoma

THE influences responsible for the rapid increase in preoccupation with small groups spring both from within the academic development of various disciplines and from various agencies instituted for devising practical solutions for immediate application. A brief mention of influences contributing to small group research will serve as orientation to the main trail of this paper.

(1) Theoretically and empirically, works of sociologists have historical priority in showing persistent concern with the topic of small groups.[1] Since the early 1920's a definite research development in sociology related to small groups has been carried on, as represented by the works of men like Thrasher, Anderson, Clifford Shaw, Zorbaugh, Hiller, Whyte. In the recurrent findings reported in this line of research, which was carried out over a period of a good many

[1] Robert E. L. Faris, "Development of the Small Group Research Movement," Chapter 7 in M. Sherif and M. O. Wilson (eds.), *Group Relations at the Crossroads*, New York: Harper, 1953.

years, one cannot help finding crucial leads for a realistic approach to experimentation in this area.

(2) Another source of research impulse is the practical concern of business and military agencies. A series of studies initiated by Elton Mayo and his associates at the Harvard Business School in the late 'twenties has proliferated in various institutions both academic and technological. Another impetus along this line came from the concern of military agencies for establishing effective techniques for the assessment of leaders.

(3) Another major influence in the development of small group studies comes from psychological research. No matter with what theoretical concepts they were introduced, psychological experiments almost always showed differential effects on the behavior of individuals when persons undertook an activity in relation to other individuals or even in their presence, as can be ascertained readily by a glance at Murphy, Murphy, and Newcomb's *Experimental Social Psychology*. F. H. Allport's experiments, which started around 1915, are illustrative of this point. In the 'thirties, it became increasingly evident that such social behavior as cooperation—competition, ascendance—submission, and the like, could not be properly studied when the individual is considered in isolation. Psychological "trait" theories or personality typologies fell far short in explaining social relations. Therefore, when Moreno's work appeared in this country in the middle 'thirties presenting his sociometric technique for the study of interpersonal choices and reciprocities among individuals (i.e. role relations), it was not long before it found wide application. A few years later Kurt Lewin and his associates demonstrated the weighty determination of individual behavior by the properties of group atmosphere. This line of experimentation was the basis of other subsequent studies coming from the proponents of the Group Dynamics school. Some other major influences coming from psychology will be mentioned in the course of the paper.

INTERDISCIPLINARY COOPERATION AND THE CONCEPT OF "LEVELS"

As becomes apparent even from this brief mention of the background, men from various disciplines contributed to make the study of small groups the going concern that it is today. As a consequence there is diversity of emphasis in formulating problems and hypotheses, and diversity in concepts used. This state of affairs has brought about considerable elbow-rubbing and interdisciplinary bickering among sociologists, psychologists, and anthropologists. In consequence of this process the interdisciplinary approach has become a necessity for achieving a rounded picture.

Faced with the task of dealing with both psychological and socio-cultural factors in human relations problems, psychologists have too often yielded to the temptation of improvising their own "sociologies" in terms of their preferred concepts. Sociologists, on the other hand, have sometimes engaged in psychological improvisations. While sociological or psychological improvisation at times proves necessary on the frontiers of a discipline, it is difficult to justify on topics for which a substantial body of research exists in sociology or in psychology, as the case may be.

In usual practice interdisciplinary cooperation is taken to imply rallying psychologists, sociologists, anthropologists, and other social scientists to toss their theories and concepts into the ring. As we have seen in the past, mere juxtaposition of utterances of psychologists, sociologists, and others, does not bring interdisciplinary cooperation. Nor is it possible to secure interdisciplinary integration by arranging segments from each discipline in a series.

The outlines of an interdisciplinary approach appear more clearly with the realization that "psychological" and "sociological" signify different levels of analysis. Men working in the human relations area are approaching related, similar, or even the same problems at different levels of analysis, necessitating units and concepts appropriate for dealing with events on that level. If we are working on the psychological level, our unit of analysis is the *individual;* hence our treatment must be in terms of his psychological functioning—in concepts such as motives, judging, perceiving, learning, remembering, and imagining. If we are working on a sociological or cultural level, our concepts are in such terms as social organiza-

tion, institutions, value systems, language, kinship systems, art forms, and technology.[2]

The concept of levels holds a fairly obvious but invaluable check on the validity of our findings. For if it is valid, a generalization reached at one level of analysis on the same topic is not contradicted and, in fact, gains support from valid generalizations reached at another level. For example, the psychologist's findings of differential behavior of an individual when participating in the activities of his group should be (and are) substantiated by findings on the sociological level, namely that collective action in a group has properties peculiar to the group. Checking and cross-checking findings obtained at one level against those obtained at another level on the same topic will make interdisciplinary cooperation the integrating meeting ground that it should be.

During the last century in the social sciences, and more recently in psychology, the dependence of sub-units upon the setting or superordinate system of which they are parts has been gaining weight, especially in the face of unrewarding attempts to account for the functioning system in an additive way. Understanding of part processes is possible only through analysis of their relations within the functioning system, as well as by analysis of unique properties of the part process itself. Unless knowledge of the superordinate or larger functioning system is gained first, before tackling the part processes, there is the likelihood of unwarranted generalizations concerning the parts, and misinterpreting the true functional significance of the processes observed.

In this connection an observation reported by Malinowski in 1922 in relation to the Kula exchange system is instructive. Even from the most intelligent native no coherent account of this exchange system could be obtained. "For the integral picture does not exist in his mind; he is in it, and cannot see the whole from the outside." [3]

This point can be illustrated in relation to small group studies. Since Lewin's experiments in the 1940's comparing lecture and group discussion methods in changing attitudes, various studies have shown that *in the American setting* skillfully conducted group discussion in which members participate is more effective than lecture presentation. On the basis of results obtained in the American setting, it would seem that the superiority of group discussion methods might be universal. That this is not the case is indicated by one of the studies in the UNESCO project in India.[4] In an attempt to modify caste attitudes among college students in India using various methods, the greatest changes arose as a result of a lecture method using emotional appeals. The experimenter wrote: "Contrary to our original expectation and hypothesis, these young boys do not seem to be in a position to exploit fully the discussion technique, in bettering their social relationships. Does it indicate that our boys have got to be used to the democratic ways of discussion and at present prefer to be told what are the right attitudes rather than to be allowed to talk them out?" Within a social organization whose values clearly encourage dependence on authority and effectively discourage settling issues on a give-and-take basis in small sub-units, particular dependencies may become so much a part of the individual's ego system that one could predict that group discussion techniques used in Americal studies would be less effective than methods more in harmony with the social organization in which it takes place.

Such comparative results illustrate the value of starting *first* with due consideration of the socio-cultural setting with its organization and values, before generalizations are made about small groups functioning as parts of that setting.[5] For small groups are not closed systems, especially in highly complex and differentiated societies such as the United States.

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[2] "The human group is an organization of two or more individuals in a role structure adapted to the performance of a particular function. *As thus defined the group is the unit of sociological analysis.*" R. Freedman, A. H. Hawley, W. S. Landecker, H. M. Miner, *Principles of Sociology,* New York: Holt, 1952, p. 143, emphasis added.

[3] B. Malinowski, *Argonauts of the Western Pacific,* London: Routledge, 1922, p. 83.

[4] Gardner Murphy, *In the Minds of Men.* New York: Basic Books, 1953, pp. 114–115.

[5] See, e.g., W. F. Whyte, "Small Groups and Large Organizations," Chapter 12 in J. H. Rohrer and M. Sherif (eds.), *Social Psychology at the Crossroads,* New York: Harper, 1951; C. H. Arensberg, "Behavior and Organization: Industrial Studies," Chapter 14, *ibid.*

Facts obtained concerning the group setting are in terms of concepts and units at the social or cultural level of analysis. They will not give the step-by-step analysis of the particular interaction process; they will not be adequate for the task of dealing with interpersonal relations or behavior of particular individual members. At this point, psychological concepts are needed for a detailed analysis of reciprocal relations, for handling motives, perceptions, judgments, and the like.

SOME RECENT INVESTIGATIONS

The rest of the present paper is devoted to a summary statement of the attempts on our part toward pulling together some relevant findings in sociology and in psychology in the study of small groups. In these attempts the guiding considerations have been the following:

(1) To extract some minimum generalizations from the sociological findings on small groups on the one hand; on the other, to extract relevant principles from work coming from the psychological laboratory.

(2) To formulate problems and hypotheses relating to one another indications of the two sets of relevant findings, that is from sociological and psychological research.

(3) To test hypotheses thus derived with methods and techniques which are appropriate for the particular problem—experimental, observational, sociometric, questionnaire, or combinations thereof as the case may be.

Let us start with the term "small group" itself, which is coming to mean all things to all people. If the concept is considered at the outset, research on small groups will gain a great deal in the way of selection of focal problems for investigation, and hence effective concentration of efforts.

"Small group" may mean simply small numbers of individuals. If this is the criterion, any small number of individuals in a *togetherness situation* would be considered a small group. But a conception of small groups in terms of numbers alone runs counter to the properties of the actual small groups which have made their study such a going concern today.

One of the objectives of concentrating on small group research should be attainment of valid generalizations which can be applied, at least in their essentials, to any group and to the behavior of individual members. Accordingly, one of our first tasks has been that of extracting some minimum essential features of actual small groups from sociological work. In this task there is a methodological advantage in concentrating on *informally organized groups,* rather than formally organized groups in which the leader or head, and other positions with their respective responsibilities, are appointed by a higher authority, such as a commanding officer or board. In informally organized groups, group products and the particular individuals who occupy the various positions are determined to a much greater extent by the actual interaction of individuals. If we are careful at the beginning to refer to the general setting in which small groups form and function, their products and structure can be traced through *longitudinal observation* of the interaction process.

On the basis of an extensive survey of sociological findings, the following minimum features in the rise and functioning of small groups were abstracted:

(1) There are one or more *motives* shared by individuals and conducive to their interacting with one another.

(2) *Differential effects* on individuals are produced by the interaction process, that is, each individual's experience and behavior is affected in varying ways and degrees by the interaction process in the group.[6]

(3) If interaction continues, a *group structure* is stabilized consisting of hierarchical status and role relationships, and is clearly delineated as an *in-group* from other group structures.

(4) A *set of norms* regulating relations and activities within the group and with non-members and out-groups is standardized.[7]

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[6] This feature, long noted by sociologists, has received repeated laboratory confirmation by psychologists, as mentioned earlier.

[7] It is not possible here to review sociological findings on which these features are based or to discuss them more fully. They have been elaborated in the author's *Psychology of Ego-involvements* (with H. Cantril), New York; Wiley, 1947, Chapter 10; *An Outline of Social Psychology,* New York: Harper, 1948; and *Groups in Harmony and Tension* (with C. W. Sherif), New York: Harper, 1953, Chapter 8.

We have not made *interaction* a separate item in these minimum features, as some writers have, because interaction is the *sine qua non* of any kind of social relationship, whether interpersonal or group. Since human interaction takes place largely on a symbolic level, *communication* is here considered part and parcel of the interaction process.

When group structure is analyzed in terms of hierarchical status positions, the topic of *power* necessarily becomes an integral dimension of the hierarchy. Power relations are brought in as an afterthought only if this essential feature of group hierarchy is not brought into the conception of group. Of course, power does in many cases stem from outside of the group, and in these cases the nature of established functional relations between groups in the larger structure has to be included in the picture.

Our fourth feature relates to the standardization of a set of norms. The term "social norm" is a sociological designation referring generically to all products of group interaction which regulate members' behavior in terms of the expected or even the ideal behavior. Therefore, norm does not denote average behavior.[8] The existence of norms, noted by sociologists, has been experimentally tested by psychologists in terms of convergence of judgments of different individuals [9] and in terms of reactions to deviation.[10] A norm denotes not only expected behavior but a *range of tolerable behavior*, the limits of which define deviate acts. The extent of the range of tolerable behavior varies inversely with the significance or consequence of the norm for the identity, integrity, and major goals of the group.

With these minimum essential features of small informally organized groups in mind, a group is defined as a social unit which consists of a number of individuals who, at a given time, stand in more or less definite interdependent status and role relationships with one another, and which explicitly or implicitly possesses a set of norms or values regulating the behavior of the individual members, at least in matters of consequence to the group.

Common group attitudes or sentiments are not included in this definition because social attitudes are formed by individuals in relation to group norms as they become functioning parts in the group structure. At the psychological level, then, the individual becomes a group member to the extent that he internalizes the major norms of the group, carries on the responsibilities, and meets expectations for the position he occupies. As pointed out by various authors, his very identity and self conception, and his sense of security, become closely tied to his status and role in the group through the formation of attitudes relating to his membership and position. These attitudes may be termed "ego-attitudes" which function as constituent parts of his ego system.

On the basis of findings at a sociological level, hypotheses concerning the formation of small in-groups and relations between them were derived and tested in our 1949 camp experiment.[11] One of the major concerns of that study was the feasibility of experimental production of in-groups among individuals with no previous role and status relations through controlling the conditions of their interaction.

The hypotheses tested were:

(1) When individuals having no established relationships are brought together to interact in group activities with common goals, they produce a group structure with hierarchical statuses and roles within it.

(2) If two in-groups thus formed are brought into functional relationship under conditions of competition and group frustration, attitudes and appropriate hostile actions in relation to the out-group and its members will arise and will be standardized and shared in varying degrees by group members.

As sociologists will readily recognize, testing of these hypotheses is not so much concerned with the discovery of new facts as

[8] E.g., E. T. Hiller, *Social Relations and Structure*, New York: Harper, 1947; R. Freedman, A. H. Hawley, W. S. Landecker, H. M. Miner, *op. cit.*

[9] M. Sherif, *The Psychology of Social Norms*, New York: Harper, 1936.

[10] S. Schachter, "Deviation, Rejection, and Communication," in L. Festinger, K. Back, S. Schachter, H. Kelley, and J. Thibaut, *Theory and Experiment in Social Communication*, Ann Arbor: Research Center for Group Dynamics, 1952.

[11] M. Sherif and C. W. Sherif, *Groups in Harmony and Tension*, New York: Harper, 1953, Chapters 9 and 10.

getting a clearer picture of the formative process under experimentally controlled conditions. It aims rather at singling out the factors involved in the rise of group structure, group code or norms, and in-group—out-group delineation which will make their intensive study with appropriate laboratory methods on the psychological level possible.

To test these hypotheses, 24 boys of about 12 years of age from similar lower middle class Protestant backgrounds were brought to an isolated camp site wholly available for the experiment. The early phase (stage I) of the study consisted of a variety of activities permitting contact between all the boys, and observation of budding friendship groupings. After being divided into two groups of 12 boys each (stage II) in order to split the budding friendship groupings and at the same time constitute two similar units, the two groups lived, worked and played separately. All activities introduced embodied a common goal (with appeal value to all) the attainment of which necessitated cooperative participation within the group.

At the end of this stage, there developed unmistakable group structures, each with a leader and hierarchical statuses within it, and also names and appropriate group norms, including *sanctions* for deviate behavior. Friendship preferences were shifted and reversed *away* from previously budding relationships *toward* in-group preferences. Thus our first hypothesis concerning in-group formation was substantiated.

In the final phase (stage III), the two experimentally formed in-groups were brought together in situations which were competitive and led to some frustration as a consequence of the behavior of the groups in relation to each other. The result of intergroup contact in these conditions was enhancement of in-group solidarity, democratic interaction, and in-group friendship on the one hand, and out-group hostility, name calling and even fights on the other, indicating that in-group democracy need not lead to harmonious relations with outsiders when the nature of intergroup relations is fraught with conditions conducive to tension. The resistance which developed to post-experimental efforts at breaking down the in-groups and encouraging friendly interaction is indicative of the unmistakable effect of group products on individual members. Thus this study substantiated the second hypothesis concerning determination of norms toward out-groups by the nature of relations between groups, and demonstrated some effects of intergroup relations upon in-group functioning.

One of the main methodological considerations of this experiment was that subjects were kept unaware of the fact that they were participating in an experiment on group relations. The view that subjects cease to be mindful that their words and deeds are being recorded is not in harmony with what we have learned about the structuring of experience. The presence of a personage ever observing, ever recording our words and deeds in a situation in which our status and role concerns are at stake cannot help coming in as an important factor in the total frame of reference. Therefore, in our work, the aim is to establish definite trends as they develop in natural, life-like situations and to introduce precision at choice points when this can be done without sacrificing the life-like character which gives greatest hope for validity of these trends.

The study just summarized illustrates the testing of hypotheses derived from sociological findings in experimentally designed situations. Our next point relates to psychological findings, generalizations, and laboratory techniques relevant to the study of experience and behavior of individual group members. Here our task is to achieve a more refined analysis on a psychological level of individual behavior in the group setting through precise perceptual and judgmental indices. If such data obtained through precise judgmental and perceptual indices and other appropriate techniques are in line with findings concerning group relations on the sociological level, then we shall be moving toward integration of psychological and sociological approaches in the study of group relations.

Here we can state only the bare essentials of the psychological principles, coming from a major trend in experimental psychology, which are utilized in designing the experiments to be reported.[12]

[12] Fuller accounts of these principles from the works of psychologists and their background may

Judgments and perceptions are not merely intellectual and discrete psychological events. All judgments and perceptions take place within their appropriate frame of reference. They are jointly determined by functionally related internal and external factors operating at a given time. These interrelated factors—external and internal—constitute the frame of reference of the ensuing reaction. Observed behavior can be adequately understood and evaluated only when studied within its appropriate frame of reference or system of relations. The external factors are stimulus situations outside of the individual (objects, persons, groups, events, etc.). The internal factors are motives, attitudes, emotions, general state of the organism, effects of past experience, and the like. The limit between the two is the skin of the individual—the skin being on the side of the organism.

It is possible, therefore, to set up situations in which the whole appraisal, evaluation of a social situation, will be reflected in the judgments and perceptions of the individual. In short, under appropriate and relevant conditions, the way the individual sizes up a situation in terms of the whole person he is at the time can be tapped through seemingly simple perceptual and judgmental reactions.

An additional feature of this underlying principle should be clearly stated because of certain conceptions in psychology which make perception almost an altogether arbitrary, subjective affair. If external stimulus situations are well structured in definite objects, forms, persons, and groupings, perception will correspond closely to the stimulus structure on the whole. This is not to say that functionally related internal factors do not play a part in the perception of structured situations. The fact that some well-structured situations rather than others are singled out as "figure" by the individual indicates that they do. Such facts are referred to under the concept of *perceptual selectivity*.

If, on the other hand, the external field is vague, unstructured, in short, allows for *alternatives*—to that extent the relative weight of internal factors (motives, attitudes) and social factors (suggestion, etc.) will increase. It is for this reason that the exhortations of the demagogue are relatively more effective in situations and circumstances of uncertainty. Since perceptions, judgments, and like processes, are jointly determined by external and internal factors, it is possible to vary their *relative weights* in differing combinations, giving rise to corresponding judgmental and perceptual variations, and this has been done in various experiments. In a study carried out as part of our project at the University of Oklahoma, James Thrasher covaried systematically the stimulus situation in gradations of structure, and the nature of interpersonal relations of subjects (strangers and friends), to determine the reciprocal effects of these variations on judgmental reactions. It was found that as the stimulus situation becomes less structured, the correspondence between stimulus values and judgment values decreases, and the influence of social factors (established friendship ties in this case) increases.[13]

Following the implications of the above, it is plausible to say that behavior revealing discriminations, perceptions, evaluations of individuals participating in the interaction process as group members will be determined: not *only* by whatever motivational components and unique personality characteristics each member brings with him, and not *only* by the properties of stimulus conditions (social or otherwise) specified in an unrelated way, but as influenced, modified, and even transformed by these and by the special properties of the interaction process, in which a developing or established state of reciprocities plays no small part. Interaction processes are not voids.

The starting point in our program of research was the experimental production of group norms and their effects on perception and judgment.[14] This stems from our concern for experimental verification of one

be found in M. Sherif, *The Psychology of Social Norms, An Outline of Social Psychology;* M. and C. W. Sherif, *op. cit.*, Chapter 6.

[13] James D. Thrasher, "Interpersonal Relations and Gradations of Stimulus Structure as Factors in Judgmental Variation: An Experimental Approach." To appear in *Sociometry*.

[14] M. Sherif, *The Psychology of Social Norms, op. cit.*

essential feature of any group—a set of norms (feature 4 of small groups above). Groups are not transitory affairs. Regulation of behavior in them is not determined by the immediate social atmosphere *alone*.

Especially suggestive in the formulation of the problem was F. Thrasher's observation on small groups that behavior of individual members is regulated in a binding way (both through inner attachment and, in cases of deviation, through correctives applied) by a code or set of norms. Equally provocative in this formulation was Emile Durkheim's *Elementary Forms of Religion,* in which a strong point was made of the rise of *représentations collectives* in interaction situations and their effect in regulating the experience and outlook of the individual.

After thus delineating the problem, the next step was to devise an experimental situation which lacked in objective anchorages or standards (was vague or unstructured) in order to maximize the effects of the social interaction process. When individuals face such an unstructured stimulus situation they show marked variations in reaction. However, these marked individual variations will not occur if the stimulus is a definite, structured object like a circle or a human hand. There will be agreement among individuals on the whole when they face a circle or a normal hand even if they are five-thousand miles apart and members of different cultures. The fact of objective determination of perception and judgment and the ineffectiveness of social influences (suggestion, etc.) in relation to structured stimuli was clearly noted in the original report of this experiment in several contexts. In a later publication, to stress cases of objective determination of psychological processes, a chapter was devoted to the effects of technology and its decisive weight in determining social norms and practices, with numerous illustrations from various parts of the world. Among them was our study conducted in the early 'forties of five Turkish villages with varying degrees of exposure to modern technology, specifically dealing with the compelling effects of such differential exposure on judgmental, perceptual, and other psychological processes.[15]

The experimental situation chosen for the unit studying norm formation was the autokinetic situation (the apparent movement of a point of light in a light-proof room lacking visible anchorages). The *dimension* chosen was the *extent* of movement. As this study is printed in detail in various places, only the bare essentials are given here.

First it was established that the judgment of the extent of movement for given brief exposures varies markedly from individual to individual. Then individuals were brought to the situation to make their judgments together. If, during the course of their participation, their judgments converge within a certain range and toward some modal point, we can say they are converging to a common norm in their judgments of that particular situation. It is possible however that this convergence may well be due to immediate felt social pressure to adjust to the judgments spoken aloud by the other participants in the situation. Therefore, going a step further, if it is shown that this common range and modal point are maintained by the individual in a subsequent session on a different day when he is alone, then we can say that the common range and modal point have become his own.

The results substantiated these hunches. When individuals face the same unstable, unstructured situation for the first time together with other participants, a range of judgment and a norm within it are established which are peculiar to that group. After the group range and norm are established, an individual participant facing the same situation *alone* makes his judgments preponderantly in terms of the range and norm that he brings from the group situation. But convergence of judgments is not as marked as this when individuals first go through individual sessions and then participate in group sessions.

When the individual gives his judgments repeatedly in the alone situation, the judgments are distributed within a range and

[15] M. Sherif, "Contact with Modern Technology in Five Turkish Villages," pp. 374–385 in Chapter 15, *An Outline of Social Psychology, op. cit.*

around a modal point peculiar to the individual. This finding has important theoretical implications. The underlying psychological principle, in individual and group situations, is the same, namely that there is a tendency to reach a standard in either case. Here we part company with Durkheim and other sociologists who maintained a dichotomy between individual and social psychology, restricting the appearance of emergent properties to group situations alone. In both cases, there are emergent properties. In the individual sessions they arise within the more limited frame of reference consisting of the unstructured stimulus situation and special psychological characteristics and states of the individual; whereas in togetherness situations the norm is the product of all of these *in* the particular interaction situation. The norm that emerges in group situations is not an average of individual norms. It is an emergent product which cannot be simply extrapolated from individual situations; the properties of the unique interaction process have to be brought into the picture. Therefore, the fact remains that group norms are the products of interaction process.

In a subsequent unit, it was found that a characteristic mode of reaction in a given unstructured situation can be produced through the introduction of a prescribed range and norm.[16] When one subject is instructed to distribute his judgments, within a prescribed range around a modal point, which vary for each naive subject, the preponderant number of judgments by the naive subjects come to fall within the prescribed range and around the modal point introduced for them, and this tendency continues in subsequent alone sessions. This tendency is accentuated if the cooperating subject has prestige in the eyes of the naive subject. These findings have been substantiated in a number of studies. For example, it has been shown that the tendency to maintain the prescribed range persists after several weeks.[17] The actual presence of another person who makes judgments within a range prescribed by the experimenter is not essential. Norman Walter demonstrated that a prescribed norm can be produced through introduction of norms attributed to institutions with high prestige.[18] A prescribed distribution of judgments given by tape recording is similarly effective.[19] A prescribed range can be established, without social influence, through prior experience in a more structured situation with light actually moving distances prescribed by the experimenter.[20]

The advantages of a technique such as the autokinetic device for studying norm formation and other aspects of group relations are: (1) Compared with gross behavioral observations, it yields short-cut precise judgmental indices along definite dimensions reflecting individuals' own appraisals or sizing-up of the situation. (2) Judgmental or perceptual reaction obtained is *indirect*, that is, it is obtained in relation to performance and situations which do not appear to the subject as directly related to his group relations, his positive or negative attitudes. The feasibility of the use of judgmental variations demonstrated in this study constituted the basis of its use in subsequent studies dealing with various aspects of group relations.

At this point, longitudinal studies will bring more concreteness to the process of norm formation. As Piaget demonstrated in his studies of rules in children's groups, the formation of new rules or norms cannot take place until the child can perceive reciprocities among individuals.[21] Until then he abides by rules because people important in his eyes or in authority say that he shall. But when the child is able

[16] M. Sherif, "An Experimental Approach to the Study of Attitudes," *Sociometry*, 1 (1937), pp. 90–98.

[17] E. W. Bovard, Jr., "Social Norms and the Individual," *Journal of Abnormal and Social Psychology*, 43 (1948), pp. 62–69.

[18] Norman Walter, "A Study of the Effects of Conflicting Suggestions upon Judgment of the Autokinetic Situation," Doctoral dissertation, University of Oklahoma, 1952.

[19] R. R. Blake and J. W. Brehm, "The Use of Tape Recording to Simulate a Group Atmosphere," *Journal of Abnormal and Social Psychology*, 1954, in press.

[20] E. L. Hoffman, D. V. Swander, S. H. Baron, and J. H. Rohrer, "Generalization and Exposure Time as Related to Autokinetic Movement," *Journal of Experimental Psychology*, 46 (1953), pp. 171–177.

[21] J. Piaget, *The Moral Judgment of the Child*, London: Kegan, Paul, 1932.

to participate in activities grasping the reciprocities involved and required of the situation, then new rules arise in the course of interaction, and these rules become his autonomous rules to which he complies with inner acceptance. Although this is in contrast to some still prevalent psychological theories (e.g. Freud), these longitudinal findings are in line with observations on norm formation and internalization in adolescent cliques and other informally organized groups. These are among the considerations which led us to an intensive study of ego-involvements, and to experimental units tapping ego-involvements in interpersonal relations and among members occupying differing positions in the status hierarchy of a group.

These experimental units represent extensions of the approach summarized to the assessment of (a) positive or negative interpersonal relations, (b) status relations prevailing among the members of in-groups, (c) positive or negative attitudes toward given out-groups and their members.

The first units along these lines dealt with interpersonal relations. It was postulated that since estimates of future performance are one special case of judgmental activity in which motivational factors are operative, the nature of relations between individuals (positive or negative) will be a factor in determining variations in the direction of these estimates. This inference was borne out first in a study showing that estimates of future performance are significantly affected by strong positive personal ties between subjects.[22] In a later unit, the assessment of personal relations through judgments of future performance was carried to include negative interpersonal relations as well as positive.[23] In line with the hypothesis, it was found that individuals tended to overestimate the performance of subjects with whom they had close positive ties, and correspondingly to underestimate the future performance of those with whom they had an antagonistic relationship.

The study of status relations in small groups followed.[24] This study is related to feature 3 in our discussion of the essential properties of groups (above), namely, the rise and effects of hierarchical status structure. Observations by the sociologist, William F. Whyte, gave us valuable leads in formulating the specific problem of this study. During one period, a Street Corner clique that Whyte observed was engaged seriously in bowling. Performance in bowling became a sign of distinction in the group. At the initial stage, some low status members proved themselves on a par with high status members, including the leader. This ran counter to expectations built up in the group hierarchy. Hence, in time, level of performance was stabilized for each member in line with his relative status in the group. In the experiment, O. J. Harvey first ascertained the status positions of individual members in adolescent cliques. This was done through status ratings by adults in close contact with the subjects, through sociometric ratings from clique members, and through observations of some of the cliques by the experimenter during their natural interaction. Cliques chosen for the final experiment were those in which there was high correspondence between the status ratings obtained.

The overall finding is that the higher the status of a member, the greater his tendency and that of other group members to overestimate his future performance. The lower the status of a group member, the less is the tendency of other group members and of himself to overestimate performance, even to the point of underestimation. If these results are valid, it should prove possible to predict leaders and followers in informal groups through judgmental variations exhibited in the way of over- and underestimations of performance.

In the summer of 1953 our first attempt was made at a large-scale experiment starting with the experimental formation of in-groups themselves and embodying as an

[22] Study by C. W. Sherif summarized in M. Sherif, *An Outline of Social Psychology*, pp. 289–292.

[23] O. J. Harvey and M. Sherif, "Level of Aspiration as a Case of Judgmental Activity in which Ego-involvements Operate as Factors," *Sociometry*, 14 (1951), pp. 121–147.

[24] O. J. Harvey, "An Experimental Approach to the Study of Status Relations in Informal Groups," *American Sociological Review*, 18 (August, 1953), pp. 357–367.

integral part of the design the assessment of psychological effects of various group products.[25] This assessment involved laboratory-type tasks to be used in conjunction with observational and sociometric data. The overall plan of this experiment was essentially like that of the 1949 study and called for carrying through a stage of in-group formation, to a stage of experimentally produced intergroup tension, and finally to integration of in-groups. The scope of this experiment embodying laboratory-type procedures at crucial points in each stage proved to be too great for a single attempt. During the period of intergroup relations (stage III), the study was terminated as an experiment due to various difficulties and unfavorable conditions, including errors of judgment in the directing of the experiment.

The work completed covered the first two stages and will be summarized here very briefly. The plan and general hypotheses for these stages are similar on the whole to those of the 1949 study summarized earlier.

Prior to the experiment, subjects were interviewed and given selected tests administered by a clinical psychologist. The results of these assessments will be related to ratings made by the experimental staff along several behavioral dimensions during the experiment proper, when in-group interaction had continued for some time.

At the end of the second stage, two in-groups had formed as a consequence of the experimental conditions, although the rate of group formation and the degree of structure in the two groups were somewhat different.

Our hypothesis concerning experimental formation of in-groups substantiated in the 1949 study was supported. As a by-product of in-group delineation we again found shifts and reversals of friendship choices *away* from the spontaneous choices made prior to the division of groups and *toward* other in-group members.

At the end of this phase of in-group formation, just before the first scheduled event in a tournament between the two groups, psychological assessment of group members within each status structure was made through judgments obtained in a laboratory-type situation. In line with methological concerns mentioned earlier in the paper, the experimental situation was introduced to each group by a member of the staff with the proposal that they might like to get a little practice for the softball game scheduled later that day. When this proposal was accepted, the experimenter took each group separately and at different times to a large recreation hall where he suggested turning the practice into a game, in which everyone took turns and made estimates of each others' performance. This was accepted as a good idea. Thus each boy took a turn at throwing a ball at a target 25 times and judgments of his performance were made by all members after each trial.

It should be noted that in previous studies, judgments of future performance were used as an index. The important methodological departure here was using as the unit of measurement the difference between actual performance and judgment of that performance *after* it was executed. In order to do so the stimulus situation had to be made as unstructured as possible so that the developing status relations would be the *weighty factor* in determining the direction of judgmental variations.

In line with our hypothesis in this experimental unit, the results indicate that variations in judgment of performance on the task were significantly related to status ranks in both groups.[26] The performance of members of high status was overestimated by other group members; the performance of members of low status tended to be underestimated. The extent of over- or underestimation was positively related to the status rankings. Variations in judgment of performance on the task were not significantly correlated with skill, or actual scores, of the members. This should *not* be interpreted to mean that skill can be discarded as a factor or that it would not be highly related to judgmental variation in a more structured task. Of the two

[25] This experiment was carried out with a grant from the Rockefeller Foundation to the University of Oklahoma. A fuller report is being prepared with the collaboration of members of the experimental staff.

[26] This unit of the study is being prepared for publication by M. Sherif, B. J. White, and O. J. Harvey.

groups, skill seemed to be of *relatively* greater importance in the group which achieved less stability and solidarity. This is one of several indications that the relationship between judgmental variation and status rankings is closer in the group of greater solidarity and greater stability of structure. This finding of a relationship between degree of stability of the structure on the one hand and psychological response of members as revealed in their judgments, on the other, points to the necessity of systematic concern with the degree of group structure and solidarity as a variable in small group studies. In particular it should be brought systematically into the study of leadership and problems of conformity.[27]

We hope to gain greater understanding of the relationship between stability of group structure and psychological reactions as revealed by judgmental indices through a new study designed for this purpose. In this attempt the task will be held constant and the degree of established status relationships among subjects will be varied. At one extreme, subjects will be complete strangers; at the other extreme, subjects will be members of highly structured groups. The hypothesis to be tested is that judgments will be more a function of actual performance in the task in the case of strangers, and progressively more a function of existing status relations and less of skill with the increasing degrees of stability of group structure.

Following the experimental assessment of psychological effects of group structure in existing and in experimentally formed ingroups, the next step in our program of research was to extend the use of judgmental variation techniques to the level of intergroup relations among already existing groups. Such an experimental unit has recently been completed by O. J. Harvey.[28] Harvey investigated relations between existing informally organized groups and their effects on in-group functioning and on evaluations of the in-group and out-group. Organized cliques were chosen on the same basis as those in the study of status relations in existing informally organized groups already summarized. In the first experimental session, in-group members judge each others' performance on a task. In the second session, two cliques with either positive or negative relationships with each other, as the case may be, are brought to the situation together. Here a similar procedure is followed, with in-group members judging performance both of other in-group members and performance of members of the functionally related out-group. In addition, subjects rate in-group and out-group members on 10 adjectival descriptions presented on a graphic scale. These ratings were included to yield data relevant to our hypothesis concerning the nature of group stereotypes in the 1949 study and those of Avigdor's study on the rise of stereotypes among members of cooperating and rival groups.[29]

Results obtained in this experiment bear out the hypotheses. Greater solidarity is evidenced in the in-group when out-groups are present, as revealed by an increasing relationship between judgmental variation and status ranks and by greater overestimation of performance by in-group members. In-group performance tends to be judged above that of out-group members when the groups are antagonistic, which is not the case when the groups present are positively related to each other. Finally, results clearly show a much higher frequency of favorable attributes for in-group members (e.g." extremely considerate," "extremely cooperative") and a much higher frequency of unfavorable attributes given members of an antagonistic out-group (e.g. "extremely inconsiderate," "extremely uncooperative"). The difference between qualities attributed to in-group members and members of friendly out-groups is much

[27] M. Sherif, "Remarks on Socio-cultural Influences in Small Group Research." Paper presented at symposium entitled "Sociological and Anthropological Perspective on Small Group Research" at the annual meetings of the American Psychological Association, Cleveland, 1953 (mimeographed).

[28] O. J. Harvey, "An Experimental Investigation of Negative and Positive Relationships between Small Informal Groups through Judgmental Variation," Doctoral dissertation, University of Oklahoma, 1954.

[29] R. Avigdor, "The Development of Stereotypes as a Result of Group Interaction," Doctoral dissertation, New York University, 1952. Summarized in M. and C. W. Sherif, *op. cit.*, pp. 290–294.

smaller and not so clear-cut, as would be expected.

Thus, having demonstrated the feasibility of experimental study of norm formation, of status relations within groups, and of positive and negative attitudes between groups through laboratory-type techniques on the one hand and, on the other, experimental production of in-groups themselves in two previous studies, our next step is to carry through the large-scale experiment, along the lines of our 1953 attempt, which will pull together all of these various aspects into one design. Judgmental indices reflecting developing in-group and intergroup relations are to be obtained through laboratory-type techniques at choice points, in a way that does not clutter the flow of interaction process. These judgmental indices can be checked against data obtained through more familiar observational, sociometric, and like methods. If indications of the findings through judgmental processes are in line with the trends obtained by gross observational and other methods, then we can say the generalizations reached are valid. If this can be established, the laboratory-type experiment can be offered as a more precise and refined method of assessing the effects of interaction process in group relations.

This approach, which takes the behavior of individuals as an outcome of interaction process into which factors coming from the individual himself with his unique characteristics and capacities, and coming from properties of the situation, enter, affords a naturalistic behavioral setting against which the claims of various personality tests can be evaluated.

The successive phases of this comprehensive experimental plan are:

(a) Experimental production of in-groups themselves with a hierarchical structure and set of norms (intra-group relations). In line with our 1949 and 1953 studies, this is done, not through discussion methods, but through the introduction of goals which arise in the situations themselves, which have common appeal value, and which necessitate facing a common problem, leading to discussion, planning and execution in a mutually cooperative way.

(b) Bringing into functional relations the two experimentally formed groups in situations in which the groups find themselves in competition for given goals and in conditions which imply some frustration in relation to one another (intergroup tension).

(c) Introduction of goals which cannot be easily ignored by members of the two antagonistic groups, but the attainment of which is beyond the resources and efforts of one group alone. In short, superordinate goals are introduced with the aim of studying the reduction of intergroup tension to derive realistic leads for the integration of hostile groups.[30]

[30] This experiment is reported in M. Sherif, O. J. Harvey, B. Jack White, William R. Hood, Carolyn W. Sherif, *Experimental Study of Positive and Negative Intergroup Attitudes Between Experimentally Produced Groups*. The University of Oklahoma, Norman, Oklahoma, 1954.

PLANNING AN OBSERVATION ROOM AND GROUP LABORATORY

ROBERT F. BALES AND NED A. FLANDERS

Harvard University and University of Minnesota

A NUMBER of universities and other research centers are now constructing facilities to provide for the direct observation of human behavior. The development of laboratory research programs as well as increasing recognition of the value of observation for educational purposes has led to a demand for appropriate physical facilities. As in any new development, there has been a process of trial and error and much remains to be learned. From existing installations it is possible, however, to put together a composite picture of requirements often made of such facilities and what seem to be the best means of meeting these requirements. The following discussion will draw upon existing installations that we happen to know about and will attempt to give

a series of practical suggestions for those who wish to install such laboratory facilities.

The installations of the Laboratory of Social Relations at Harvard and the Laboratory for Research in Social Relations at Minnesota are those with which the authors are most familiar. Similar installations exist at the Department of Psychology, University of Toronto; Laboratory of Human Dynamics, Department of Education, University of Chicago; Department of Psychology, University of Rochester; Department of Psychology, Dartmouth College; Laboratory for Research in Group Dynamics, Fels Foundation, Philadelphia; Department of Psychology, University of Montreal; Department of Psychology, Northwestern University; Systems Research Laboratory, the RAND Corporation, Santa Monica, California; Maxwell Air Force Base, Montgomery, Alabama; U. S. Naval Submarine Base at New London, Connecticut; and at the Naval Research Laboratories, Washington, D. C. There are, no doubt, many others. The present account omits reference to smaller installations for the observation of interviews or the observation of children's behavior which are, perhaps, the most direct ancestors of contemporary installations for the study of adult behavior.

COMFORT AND SPACE REQUIREMENTS

Facilities of the sort described here should provide a setting in which small groups of people, ranging in size from two to perhaps as many as forty, can meet under optimal conditions for communication with each other and still be under the observation of technical observers or students of group process who wish to make direct codings of the behavior of participants and a sound recording of their meeting. In a typical situation there are at least three groups of people whose needs should be considered. There are, first, the group members who serve as subjects; second, the technical observers or experimenters; and third, other non-technical observers or visiting spectators who may be present for educational rather than research purposes. The facilities should be designed with each of these groups in mind.

The Needs of Group Members. To view the requirements of the facilities from the point of view of those persons who come as group members, it may be assumed that they come to the Laboratory with no clear idea about what is going to happen and for purposes which are not identical with those of the experimenters or other observers. Usually, some subjects arrive before others and there should be some facilities for receiving these subjects and providing them with a place to wait in comfort with perhaps facilities for reading and smoking. This may be in the same room where the group meets, but since this room has certain odd features to the uninitiated, such as one-way mirrors and microphones, it is often desirable to have the subjects gather in a separate room. We typically have one experimenter who acts as the host. The host-experimenter greets the subjects, introduces them to each other if necessary, and makes them comfortable until they are conducted to the group meeting room. It is probably unrealistic, except when the subjects are very young children, to expect that microphones and one-way mirrors will go unnoticed. We recommend that the host-experimenter explain in a neutral fashion the various features of the group meeting room. Our recommendation is based on the assumption that an honest explanation, pointing out that one-way windows permit observation without disturbing the group and that partially hidden microphones permit freer conversation, will do more to reduce anxiety on the part of the subject than to leave these matters unresolved.

The room should be large enough to hold groups of the top size contemplated, and should include such conveniences as a clock which can be seen by both the participants and by observers if synchronization of the observation is required, and a black board for the use of the participants. A flexible arrangement should be provided so that each participant in the group is able to see each other directly no matter what the size of the group. The chairs should be substantial and comfortable since most meetings will last for at least one hour. The ideal arrangement, from the standpoint of the subjects, might be a circle or an oval. However, this would interfere with the direct observation of some subjects by the observers. It is usually desirable to modify the oval or circle until it is a semicircle or U-shape with the open

end facing the observation mirror. The importance of direct line of sight vision from subject to subject and from observer to each subject cannot be overemphasized.

The Needs of the Research Staff. The second group to consider is the research staff. The use of the host-experimenter has several advantages from the standpoint of the laboratory staff as well as the subjects. When the physical arrangements permit all contacts between the staff and the subjects to be channelled through the host-experimenter the result is better experimental control and reduction of confusion during the experiment. The various staff members do not need to be introduced to the subjects nor do the subjects need to know the degree of complication involved in making good sound recordings and the various kinds of technical observations required. It may be desirable to make such introductions and to reveal the complications after the experiment proper or after the last of a series of experiments. Subjects typically want to hear their voices on the sound recording and find out "what it is all about." Experimental designs usually permit a full explanation at the end.

The requirement of direct vision between the observers and the subjects is basic. A poor view on the part of the observer will materially reduce his effectiveness and the reliability of his observations. The observer's task is not an easy one to perform, even when his task has been simplified as far as possible. Particular care should be taken to insure his comfort and freedom from distracting influence. One member of the staff may have the responsibility of monitoring the sound recording, seeing that the recording instrument is turned on and that the volume level of the monitoring speakers is comfortable for the observers. Perhaps one or two other observers will be making interaction codings of the participation of the group members and will, therefore, need an unobstructed view of each participant. Lack of binaural hearing which results from the use of only one monitoring speaker reduces the speed with which interaction observers can identify the subject who is talking and again reemphasizes the need for clear vision. In a typical operating set up there will also be additional apprentice observers who are being trained in the observation techniques, and ample space should be provided for them. One great advantage of a properly constructed observation room is that the observer teams, particularly in the training phase, can discuss the events of the group meeting without being heard by the participants, and the monitoring speaker can be turned off or on as required for training. A training situation of this kind is impossible except where there is complete sound and sight insulation between the subjects and the observer team.

It is desirable for members of the observation team to be able to leave the observation room without disturbing the experimental group in its final wind-up of activities. Occasionally during an experiment it is necessary for a staff member to leave or enter the observation room. The placement of the door of the observation room, therefore, is important. The observation team is a close-knit working group and a certain amount of talking, coming and going, and the like is bound to be characteristic of their activities. Every step should be taken to allow the observation team to function naturally as a group without interfering with the activities of the experimental group.

The Needs of Visiting Spectators. Finally, a third group is usually involved in experimentation of this kind. This is the group of occasional visiting spectators or perhaps a class of students who are receiving instruction in some phase of research or in the operation of groups. This is the group which is most apt to be overlooked in the first survey of requirements for facilities, but unless their needs are met they will interfere both with the experimental subjects and with the observer team. It should be remembered that such visiting spectators usually are not familiar with the facilities, they will not be disciplined in terms of what they should and should not do and can be disturbing to either the observation team or to the subjects.

Several steps can be taken to minimize this interference. First, the entrance to the observation room should be shielded in some fashion so that no sudden glare of light will flood the dimly lit observation room. Besides disturbing the observation team by reducing their vision, a brightly lighted door entrance can be seen by the subjects through the one-way mirror and may thereby disturb

them. Visiting spectators or observers who wish to smoke should be cautioned that a lighted match can be seen through a one-way mirror. Special precaution should be taken in the observation room to reduce the noise from the shuffling of feet, bumping of chairs and the normal amount of stumbling about. The floor of the observation room should be solid and preferably covered with a soft material such as cork tile or a wall to wall rug. If, in order to provide better vision from the observation room, the floor of the observation room has been raised, resulting in a dead air space between the original floor level and the observation room floor level, particular care should be taken that the resulting cavity be sound-proofed or preferably completely filled with some substance such as glass wool or cement.

To summarize, for the participants in the group meeting room, the facilities should have the character of a well-appointed conference room or classroom, arranged for the best conduct of their group meeting. For the observers, the laboratory facilities are something like the engineer's booth of a broadcasting studio and should be arranged for optimum sound reproduction and vision. For both the observation team and the visiting spectators the laboratory installation is something like an amphitheater such as those found in hospitals, where the technical and educational purposes are much the same. For the architect, the cardinal features are the proper physical placement of all the members of the three groups involved, freedom of action for each, proper placement so that each subject has a good view of all the other subjects, the observation team has a good view of the subjects, and the spectators have a good view of both the observation team and the subjects. Finally, the whole arrangement must be properly engineered for sound.

RESEARCH AND EDUCATIONAL FUNCTIONS

Most of the installations mentioned earlier are primarily dedicated to research purposes. It is entirely possible, however, that laboratory facilities of the type we are describing could support a systematic training program designed, for example, to produce trained home interviewers for a social work department. It may be worthwhile to outline briefly the research and training functions which are possible in laboratories of this type. Each function to be described may be connected with either an educational-training program or a research program. Any single function has direct implications for the design of laboratory rooms and the choice of equipment. The reader may be able to identify those functions which are important in his own program and thereby be better prepared to state the technical specifications for both the design of the laboratory rooms and the equipment he may need to purchase.

A first set of research functions is associated with the process of observation. Some observers may be concerned with the classification or coding of verbal statements as they occur in an experimental group discussion. Normally such an observer is skilled in the use of a set of categories which are specifically designed around a given research interest. The problem here is to provide such observers with the necessary equipment to record in sequence, specific behavioral phenomena at the maximum rate they are expected to occur. Typical equipment for this purpose consists either of a moving roll of paper on which pencil marks can be recorded or a set of levers which electrically activate pens which in turn make an ink record on a moving piece of paper.

A second set of research functions is concerned with analysis of permanent voice recordings. We should note in passing that it is always desirable to make a permanent voice recording of a group discussion, even if its only function is to serve as protection against accidental breakdown of the observation procedures outlined in the preceding paragraph. In addition, however, there are other types of analysis possible with a voice recording. Beginning with either a typewritten copy of the voice recording or the play-back of the recording itself, additional panels of judges or observers can make additional analyses. The argument against making a transcript includes two very strong points. First, excessive secretarial cost may prohibit the use of this method. Even a talented secretary may require from six to ten hours to produce a typescript from a one hour voice recording. Second, a typescript suffers from a tremendous loss of contextual cues. The loss of

voice inflection, the rapidity of interaction, and similar factors may reduce typescript data to a point where they are actually misleading. However, the direct playback of a voice recording to a panel of judges or observers is enhanced by the use of a typescript; additional analysis does not suffer as greatly from a loss of contextual cues by this method. There are other ways in which a voice recording can be used, depending upon research interests of the experimenter. For example, a voice recording can be used to produce a "stimulated-recall" situation in which the original subjects are helped to recreate the feelings they had in the original group situation. While listening to such a recording they may be able to reveal in a subsequent interview considerable insight into the possible causes of their original recorded behavior. A voice recording also permits the investigation of a concept such as tension release where it is desirable to relate such a concept to the noise level of a group. Cyclic outbursts of noise can be investigated by making a permanent inking record during the original live recording or by simply reproducing the sound level from the playback.

A third set of research functions is possible if equipment is provided for the recording of synchronized reactions which subjects can be trained to provide. The mechanical-electrical equipment required for such data-collecting comes at a rather high initial cost. Experience at the University of Minnesota and at the University of Chicago has indicated that subjects, in a relatively short time, can be trained to indicate simple introspective reactions at the same time they are participating in a group discussion. Dichotomous continua such as "like-dislike", "agree-disagree", set up either on a five-point or three-point scale, can be recorded and mechanically synchronized with a voice recording of the total group discussion. Subsequent analysis need not be limited only to the verbal communication, systematic analysis of such lever reaction-data provides additional non-verbal data.

A fourth set of research functions need not be discussed in detail because it is so commonly employed throughout the field. We refer to various types of paper and pencil pre-experimental or post-experimental data. Research interests which involve collating personality characteristics with certain types of group behavior, the tracing of a shift of opinion with regard to a controversial issue, and similar types of analysis, all involve the collection of pre- and post-experimental data.

In planning a room or suite of rooms for the observation and recording of group behavior it is of importance to state as clearly as possible the various research functions which are to be carried out. The combined experience of all of the institutions involved in research of this type has provided a fund of information which permit a technically qualified person to incorporate into the plans for proposed laboratory rooms modifications to provide for future expansion. The greater initial cost of providing the necessary facilities for possible future expansion of equipment is small compared to reconversion costs after a laboratory suite has been built.

DESIGN OF FACILITIES

Size of Meeting Room. The meeting rooms at the Harvard and Minnesota Laboratories are about 18 x 20 feet and will hold up to 20 participants with a fair degree of comfort. The number of participants expected in the largest groups is the governing factor in the size of the meeting room. The basic unit of measurement is the space taken by a single person including the chair and table facilities. Probably about 36″ of table front space is an adequate allowance for the single participant. Since chairs and tables need to be placed so that each participant can see each other participant and so that each can be seen by all of the observers from the one-way screen, the amount of space required is basically regulated by the design of tables. Probably a greater amount of space than is ordinarily visualized is required for optimum design.

Furnishings. Tables present a problem. If a single table is used it is obviously best adapted to a single size of group. If one wishes to run groups of different sizes under optimum conditions, a flexible table arrangement must be provided. We recommend a system utilizing small unit tables where one or two subjects would be seated at a single unit. This recommendation involves sacrificing ease of storage for increased flexibility in seating arrangements. Working from the base of 30 to 36 inches of table front per

person the most obvious solution would be to have one square table per person, or tables which are twice as long as they are wide and could seat two people on the long side. If one wishes to avoid gaps between adjacent tables, square or rectangular shaped tables necessitate 90 degree corners in the table arrangement. There are at least two disadvantages to this arrangement. Placing more than two participants in a single line hinders subject-to-subject vision as well as observer-to-subject vision. Second, we have some evidence that the corner of a table may be chosen by certain members who wish to take a peripheral position in the group since in this position they can sit back from the table a bit and are out of the direct line of participation.

A basic hexagonal shape avoids some of the disadvantages just outlined. For example, a rather flexible unit involves a trapezoidal shaped table top, the dimensions for which are given by the construction of three equilateral triangles. That is, one side is twice as long as the other three sides, which are of equal length. Tables such as these could be used in combination with rectangular tables with considerable flexibility and increased seating capacity. Perhaps the best solution is a series of six square tables, one unit (30 to 36 inches) per side, six triangular tables, one unit per side, and two or more rectangular tables one unit wide and two units long. The basic square and triangle units will join to form a round table holding twelve persons, and expanded by two rectangular units, an oval holding sixteen. In various combinations these units will form well-shaped tables, either closed or open (horseshoe shaped) for the range of size up to twelve. This is in a sense a radical solution because of the relative inconvenience of so many small units for storage. Nevertheless it may be worth while if one wishes to give optimum opportunity for direct eye-contact between each participant and each other. We have evidence that ease of eye-contact is an appreciable factor in the distribution of communications. Other factors being equal, participants tend to talk more to others they directly face than to those seated at their side.

Folding chairs have the advantage of easy storage, but have the disadvantage of light construction and are usually not very comfortable. Fixed non-folding metal chairs with arms and a slight padding are probably preferable although they take a little more space. It should be remembered that light construction of tables and chairs will probably result in their being shifted around a good deal which adds to the basic noise level of the sound recording.

Sound Treatment of Meeting Room. Nearly every aspect of design of the meeting room will affect its sound qualities, and these qualities in turn will affect the goodness of the sound recording that can be made. The relevant design features include not only size and shape, but also the treatment of surfaces in the room, the walls, ceilings and floors and the surfaces provided by the furnishings, tables, chairs, blackboards and curtains at the observation windows. In general, the aim should be to make the room acoustically dead with a minimum level of residual and accidental noise. The necessary hard surfaces such as the blackboard, observation windows and table tops will probably, in most cases, result in enough reflection of sound to avoid the psychologically disturbing character of a completely dead room.

The ceilings and walls may be treated satisfactorily in most instances, by the installation of commercial sound absorbing tile, down as far as the dado or perhaps completely to the floor. The floors should be covered with some soft material such as wall-to-wall carpeting or cork tile. Linoleum tile or other comparatively hard surfaces should be avoided because they produce an unnecessary amount of floor noise from the shufflling of feet and shifting of chairs. It is probably preferable to construct the meeting room without windows, or if windows are retained, to install them with double panes for sound proofing. Airplanes, automobiles, and other noises from the outside tend to raise the basic noise level of the sound recording. The room should not only be dead internally, but should be completely sound-insulated from the outside and from the observation room.

Ventilation and Heat. Treatment of the room for sound insulation as suggested above may create a ventilation problem, especially if windows are omitted. The room, of course, should be properly ventilated and heated, but

the installation of ventilating ducts and fans may introduce unwanted noise into the room again. Ventilation ducts should be kept as far away from the microphones as possible. Otherwise, the advantages of sound insulation of the room may be nullified by ventilator noise. In general it is probably desirable to keep the ventilation fans and motors as far removed from the meeting room as possible. It may be required in some installations to install sound baffles in the ventilation ducts. A good general principle to follow is large volume, low velocity of air movement. If the ventilation and heating systems are separate, care should be taken that the heating system does not introduce extraneous noises from clanking radiators and the like.

Lighting. In order for one-way mirrors to operate properly, the observation room must be relatively dark compared to the meeting room. One-way mirrors usually lose about 60 per cent of the light in transmission to the observation room. Hence the light level in the meeting room must be quite high. Incandescent fixtures providing an indirect light which illuminates all parts of the room equally are recommended. Fluorescent fixtures are apt to hum and increase the basic noise level. If large rheostats are used to control the intensity of the lighting system, an adjustment that is highly desirable for some experiments, they should be placed as far away as possible from all sound equipment because of the audible hum and the magnetic field which emanates from these units.

In new installations the problem will probably arise concerning whether motion pictures are to be made of the participants and whether the lighting should be designed to take care of photographic requirements. An affirmative answer to this question is a very ambitious decision both from a methodological and a financial standpoint. Lighting for photography is probably best handled by a considerable number of ceiling-mounted photofloods. Several large rheostats will permit the same lights to be used for normal lighting requirements. For the un-initiated a word of caution is appropriate. The financial load for either time-lapse or motion picture photography is very high for both the initial installation and cost per hour of research. Included among the technical problems are the noise of the camera, its relatively narrow depth of field when used under any conditions except extremely high illumination; and size of field even for a wide angle lens. A properly designed room should probably have several plate glass portholes mounted high on each of the four walls, preferably in the corners. This would require free access from the observer side to all four walls. Finally, the methodological problems are rather severe. The authors know of no research where a successful psychometric approach to the classification of photographic media has been achieved. However, it is likely that, in time, successful use of photography will be made. Direct wire television may also prove important.

Painting. Since the light level in the group meeting room must be high in comparison with the level in the observation room, the walls should probably be painted some light neutral color. Although little is known about the effects of color on participants in situations like this, it seems reasonable to assume that the color should be fairly cheerful though nonobtrusive. The observation room is dark when in operation; hence it is of some advantage to have it painted a darker neutral color to avoid its forming a white background against which the observers might be seen. It should be remembered that an enamel paint will destroy the sound absorbing qualities of the sound tile and hence any paint put over the tile should be of a very thin consistency, actually only a colored stain.

One-Way Mirrors. One-way observation mirrors can be obtained from Libbey-Owens-Ford Glass Company or other commercial sources. In most installations it will probably be desirable to have as much observation space as the size of the observation room will permit. However there is a limit to the size of a single sheet of one-way glass, so that the specifications of the "rough opening" should not be supplied to the architect until the dimensions of the glass obtainable are definitely known. For larger openings it may be necessary to "lead" two or more sheets together.

Suggested details for mounting one-way glass can be supplied by the manufacturer which should be checked with the following ideas in mind. For sound insulation as well

as protection of the mirror surface, at least one additional pane is desirable. The mirror pane should be separated from the clear pane, with a dead-air space between them of about three-eighths or one-half inch. Since the mirror surface can be easily scratched, it should face inward to the dead air-space. Further, since this is the surface from which the major reflection back to the meeting room will come, it should be placed so that it is on the back of the first pane facing the meeting room, to maximize the desired major reflection and minimize the additional unwanted reflections. Three panes of glass with the dead-air spaces produces better sound insulation than two panes of glass and one dead-air space but increases the hazard of unwanted reflections from improperly placed light because the surface of any glass tends to reflect light whether it is a one-way mirror or not. One might note in passing however that the sound insulation of other wall areas may be less than that produced by two panes of glass.

The height of the one-way mirrors and their placement should be determined by the distance between the lower sill and the floor of the observation room, not the meeting room floor. On the observers' side a bench or work surface is typically required. The surface should be about thirty inches off the floor with a six to eight inch extension of the wall above the top surface of the bench before the one-way mirror starts. This makes it possible to have lighted instruments or equipment on the bench without the light being seen through the one-way mirrors by the participants. Because the observation room floor is normally several feet higher than the meeting room floor, this sets the lower sill five feet or more off the floor of the meeting room. If observers and visitors seats are three rows deep, the successively higher tiers required for adequate vision produce the amphitheater effect alluded to earlier.

From the side of the windows seen by the group participants it may be considered desirable to give the space around the windows some decorative attention such as curtains which can be pulled over the windows when not in use and perhaps shelves or some other facilities under the windows to detract from the expanse of bare mirror. Curtains which can be pulled over the windows will probably be used much less than anticipated but nevertheless give a more comfortable and finished appearance to the installation.

Sound Equipment. The sound equipment should be obtained only after consultation with a competent sound engineer or technically qualified person, if optimal recording results are to be achieved. At the minimum this means that such a person should be consulted *before* and *during* the original installation of the equipment. Around universities, however, it is usually possible to employ a technician, perhaps a student in the electrical engineering curriculum. A good technician can help with problems of maintenance, special adaptations, constructing equipment, locating annoying sources of interference which may be difficult to find, and the like.

The basic requirements for a soundproof observation room are shown in Figure 1. The three microphone channels will permit two microphones in the ceiling and one microphone on a portable floor stand to be mixed in the pre-amplifier for optimum balance. The output of the pre-amplifier connects to a monitor speaker in the observation room. The sound is considerably better for observers when a binaural installation is used, but this requires two separate pre-amplifiers, each leading to a separate power amplifier and its own speaker. Binaural recording has definite advantages in sound localization, and is not simply a frill.

The placement of microphones follows the simple principle that the noisier the room the shorter must be the distance between microphone and the lips of the person speaking. Ceiling microphones should be shock mounted to avoid building vibration. They can be camouflaged if deception is necessary although the authors advise against such a policy.

Addition One to the Basic Elements of Figure 1 provides for voice recording. The output of the pre-amplifier may be used for supplying a signal to the recording machine(s). Each machine should have its own volume control which permits adjustment to the proper recording level. A voice recording is, first of all, insurance that if something goes wrong with the

process of observation a record of the group interaction will still exist. A voice recording can also be used to produce a typescript, create a "stimulated recall" session, and become a medium for direct analysis or practice analysis through the classification of the verbal statements. Regardless of the purpose of such a recording the machine should have certain desirable characteristics. It should have the fidelity of a medium sized radio, it should be able to record continuously for an hour (for longer sessions two machines will be needed), it should have remote control of instantaneous start, stop and back-up, it should be possible to locate any spot in the one hour recording quickly, it should have a low initial cost, and the recording medium should have a low cost per hour. Unfortunately, the ideal machine does not exist. Tape recorders generally do not meet the requirements for efficient secretarial transcription; most dictation-type, embossing recorders do not meet fidelity requirements.

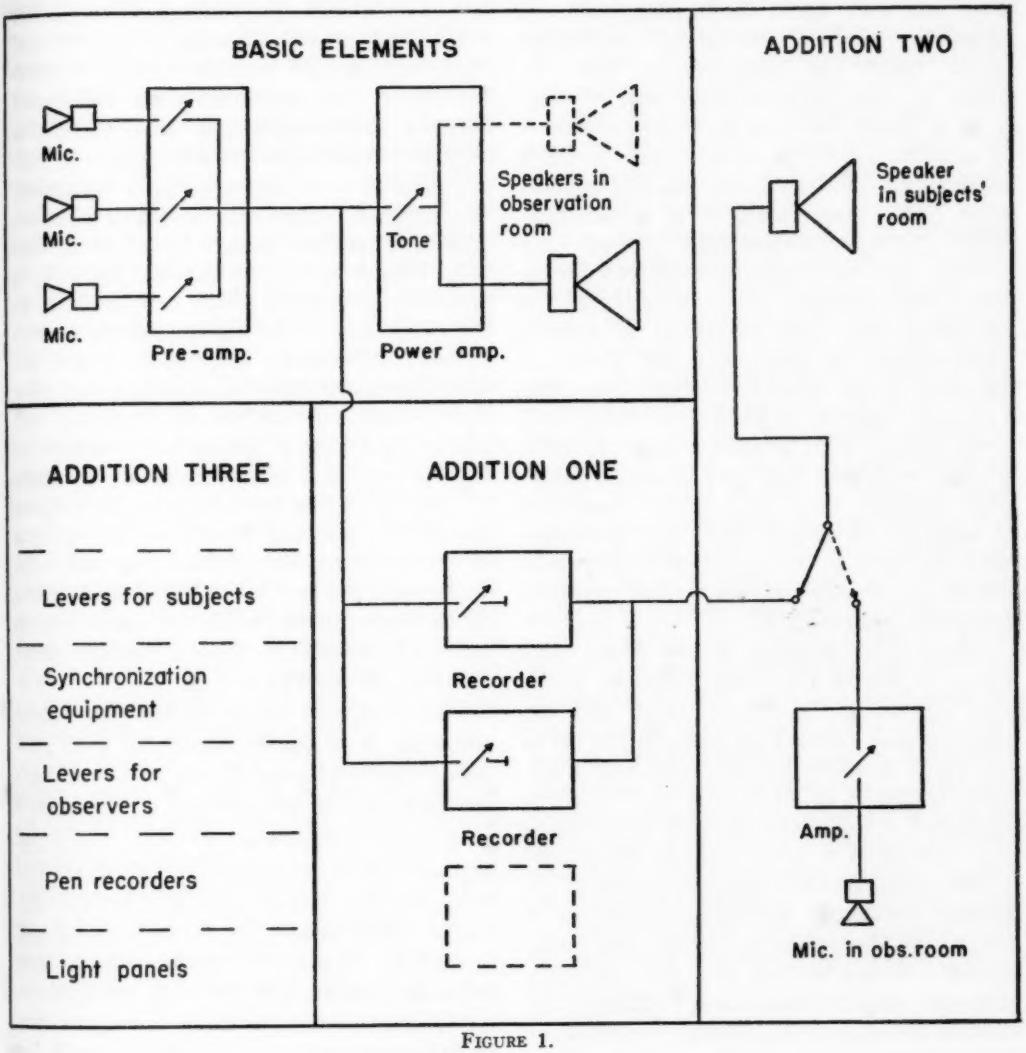

FIGURE 1.

Differences between magnetic (tape) and embossing (dictation disks or cylinders) recorders in regards to cost per hour and storage space are not so easily delineated. When a machine using tape, twin track, moving at 3.75 inches per second, is compared with the Gray Audograph embossing unit, the contrast is as follows: tape cost

per hour is 67½ cents, storage space for one hour reel boxed is 5¼ x 5¼ x 5⅝ inches, whereas Audograph disk cost per hour is approximately 7½ cents, size is an 8½ inch plastic disk almost paper thin. Tape can be permanent or it can be used over and over again. Embossing processes generally produce permanent recordings which cannot be used again; they are easier to store because they will fit into a filing folder. For any given experiment it is usually necessary to keep all recorded material on hand until the analysis is complete. This may result in a rather high initial investment when tape is used. One solution is to have each type of recorder on hand and regularly take both types of recording. The disk recording is permanent, always on file, but is not too clear because of the poorer fidelity; the tape recording may be kept a few weeks and then erased. Such a system requires only a small supply of tape and provides immediate recourse to a good fidelity recording if necessary. It follows from this discussion that the type of recording unit purchased should be closely related to the research functions contemplated.

The second addition to the Basic Elements of Figure 1 provides amplifier facilities between the observers' room and the experimental room. Two research functions are made possible by this addition. First, announcements or directions can be given through a wall-mounted speaker in the meeting room from a microphone in the observation room. Second, announcements or directions previously recorded on tape can be played to the subjects through the same speaker. Either method produces distinctly different results from those achieved by talking to subjects in person. Recorded or microphone announcements and directions are more formal, less personalized, consistently the same, and very successful for certain experimental designs. At Minnesota several experiments have been conducted where the whole procedure is automatically controlled, once the subjects are seated, by a one-hour tape recording which has been very effective.

Addition Three on Figure 1 represents more recent design considerations incorporated in the laboratory rooms at Minnesota. In order to provide maximum flexibility for a wide variety of research functions, all equipment is housed in a master control room. This equipment includes, (1) two tape and two Audograph recorders arranged for continuous recording, (2) three 20-pen Esterline-Angus units with three inking galvanometer units which provide 60 reaction records and three continuously variable records on moving paper, (3) synchronization equipment between voice recordings and paper-pen records, (4) hidden levers for subjects to indicate feelings or opinions during a discussion, (5) levers for observers to record observations, (6) patching panels for all lever control circuits and audio circuits, and (7) a movable light panel which can indicate, to any proportion of the subjects, either anonymous or personally identifiable visual information about how the subjects are moving their levers. All equipment, including the laboratory tables, is plugged into outlets of floor or wall conduits, eliminating a tangle of electrical cable lying on the floor. Even though one does not intend to have such a complex system, careful planning and relatively small increase in the initial installation expense can provide for future expansion, in terms of research functions, without later extensive remodeling.

The additional initial expense for future expansion is primarily connected with providing electrical conduit, wall pass-through openings usually with covers or doors, and floor gutters or ducts, so that additional wires can run from a centrally located control point to any part of the laboratory suite. Proper specifications for these facilities can materially reduce the usual construction costs. In smaller, less complex installations, consisting of one observation room and one experimental room, conduit or duct work for the ceiling microphones, and pass-through openings below the one-way mirrors may provide adequate room for additional wires for control lights, levers for observers, and the like. In more complex installations and particularly where new construction or extensive remodeling is involved separate ducts or conduit systems should be provided so that audio lines can be separated from present or future "control circuit" lines, thus avoiding noise interference.

One word of caution may be desirable in selecting equipment and dealing with sound engineers. An audio-engineer is usually concerned with the fidelity of equipment. Fidelity is extremely important in setting up a laboratory. However, it is not the sole criterion for the selection of different pieces of equipment. For example, in choosing microphones one can pay as much as 250 dollars for a high fidelity, high quality, condenser microphone. While this may be the last word in microphones it also has a relatively weak output, and requires extra vacuum tubes to amplify its signal because the signal which comes from such a microphone is very weak. A fifteen or twenty dollar crystal microphone, on the other hand delivers a strong signal and probably has greater fidelity potential than the average tape recorder of the medium price range. Unless one expects to record music he would be wise to choose the less expensive crystal microphone over the much more expensive condenser microphone. One may also wish to consider portability of the equipment for field use, in which case a low impedance system which permits long leads to the microphone is an advantage. The extra advantage in sound localization given by binaural recording is also definitely worth considering, for field as well as laboratory use. Binaural tape recorders are now readily available.

The over-all clarity and balance of any given recording will be determined by *all* of the sound units involved in making the recording; that is, the fidelity will be no greater than the fidelity of the weakest link in the total sound system. It is, therefore, important that all units be of adequate and comparable quality. To purchase a poor tape recorder, a poor microphone, or a poor preamplifier, will limit the over-all clarity and understandability of the voice recording; by the same token one very expensive unit in combination with average quality components will not increase the fidelity of the over-all system and merely represents a wasted investment. The one exception to this rule may be the tape recorder or recording unit itself. While a more expensive model will not increase the fidelity of the system, it may increase the reliability with which good recordings are made because it will break down less frequently and consequently require less maintenance.

The over-all performance of sound equipment is completely dependent on its surroundings. One of the authors recently visited a new laboratory suite which included well matched, very expensive, audio equipment. Unfortunately, the laboratory was situated near noise sources and had a noisy ventilating system. The sound equipment reproduced, with utmost fidelity, each external noise and the hiss of the ventilator. In another installation the rooms were well designed with sound absorbing tile. But the sound tiles were painted with a hard enamel paint which destroyed their effectiveness.

In general, the facilities which go to make up a good observation room are interdependent, and the balance of the whole system must be considered in arriving at a good design. But this minor degree of complexity will hardly discourage those who believe that systems as complex as social groups can be understood and studied scientifically. The laboratory study of social behavior is now demonstrably effective in increasing our scientific knowledge. Properly designed facilities are definitely worth the trouble it takes to obtain them.

NEWS AND ANNOUNCEMENTS

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American Association for the Advancement of Science. The program of Section K will run from Tuesday afternoon, December 28, 1954, through Thursday afternoon, December 30, 1954. Panels will be presented on the following topics: Regional Economic Analysis, Trends in Urbanization, The Structure of Cities, Cost-Benefit Analysis for Resource Development, and The Organization of Research for Western Development. The presidential address will be "The International Consequences of Scientific Research," delivered by J. B. Condliffe.

The American University. The title of the department has been changed from Sociology and Public Welfare to Sociology and Anthropology. Austin Van der Slice remains as chairman.

Robert T. Bower and Harvey C. Moore were advanced to the rank of Associate Professor in Sociology and Anthropology respectively.

James H. Fox has just completed his work as research director for the recently published Survey of the Episcopal Diocese of Washington, D. C.

Bard College. Gerard DeGré, Associate Professor, received a Fulbright Lecture Award for Cairo, Egypt, for 1954–55. He is attached to the American University in Cairo and directs the Social Research Seminars in Advanced Social Studies.

University of California, Riverside. Frank Freeman Lee, a specialist in inter-group relations, has been appointed Assistant Professor of Sociology at the University of California's new College of Letters and Science in Riverside.

Universidad Central de Venezuela. The new Department of Sociology and Cultural Anthropology entered its third year of operations on September 15. It has more than doubled its staff since opening in the Fall of 1952.

J. M. Cruxent, Curator of the Museum of Natural Science in Caracas, was on leave of absence from January to April, 1954, during which time he collaborated with the anthropological-archaeological expedition of ex-King Leopold of Belgium to the Belgian Congo and Panama. During this interval James Silverberg lectured in his place in the Archaeology class.

George W. Hill attended the World Population Conference in Rome called by the United Nations, August 30 to September 10. He also attended the Immigration Conference of the International Catholic Migration Committee at Breda, Holland, in September.

University of Colorado. Gordon H. Barker and Jiri Nehnevajsa were on leave during the past academic year. Professor Barker was in Germany teaching University of Maryland extension courses in sociology, while Professor Nehnevajsa was at the University of Washington and Harvard University on a SSRC post-doctoral fellowship in statistics.

W. H. Higman, recently promoted to Associate Professor, was named chairman of the Division for the academic year 1954–55.

J. H. Greenberg Monane resigned from the staff and was replaced by Judson Pearson, a recent Ph.D. from the University of Washington, at the rank of Assistant Professor.

Cornell University. This year marked the initiation of a University-wide core training course in social science research methods. This course is the result of two years of planning and preparation under a grant from the Social Science Research Center. More than thirty faculty members from various fields are involved in teaching and conducting laboratories. Manuals, consisting of general exposition, collected readings, bibliography, laboratory exercises and research assignments, are being prepared for each of the major research methods.

In addition to the continuing research programs in the fields of inter-group relations, values, gerontology, and applied anthropology, the following new studies are being initiated during the present year: Studies in Cross-Cultural Socialization in India and the Philippines (Ford Foundation); Study of Women's Role in American Society (U. S. Public Health Service); India Village Development Project (Ford Foundation); Methodological Problems Involved in the Study of Non-Western Areas (Rockefeller Foundation); Research Program in Gerontology in collaboration with the Cornell University Medical College (New York Foundation); Propositional Inventory on Research on Desegregation (Ford Foundation).

Allan R. Holmberg and Stephen Richardson are fellows of the Center for Advanced Study in the Behavioral Sciences during 1954–55.

Robin M. Williams, Jr. is spending the academic year at the Institute for Sociology, University of Oslo, Norway under a Fulbright grant.

Alexander H. Leighton is on sabbatical leave for the year 1954–55.

Gordon F. Streib has been appointed Director of the Study of Occupational Retirement.

William F. Whyte, School of Industrial and Labor Relations, is spending his sabbatical year doing research for the Creole Petroleum Company in Venezuela.

Edward A. Suchman has been appointed to full Professor.

Morris E. Opler will be on sabbatical leave the Spring Semester.

Max Ralis has joined the staff as field director of the research project on the Methodological Problems Involved in the Study of Non-Western Areas. He spent the fall term in India.

James Montgomery, Department of Housing and Design, received a grant from the Cornell Social Science Research Center for an analysis of the role of values in housing preferences.

Graduate students of the Department of Sociology and Anthropology who have accepted appointments in other institutions include: Robert Eichhorn, Purdue University; William Evan, Princeton University; Martin Martel, University of Illinois; H. David Kirk, McGill University; Lawrence Podell and George Theodorson, University of Buffalo.

Milton L. Barron joined the Department of Sociology and Anthropology at the College of the City of New York beginning with the fall term, 1954.

Charles E. Ramsey of the University of Minnesota joined the Department of Rural Sociology as Associate Professor.

W. W. Reeder of the Department of Rural Sociology spent the first semester on sabbatical leave. While on leave he conducted a study of leadership in a Utah community under a grant from the Fund for Adult Education.

Edward O. Moe has assumed new administrative responsibilities in the Extension Service. He retains his membership in the Department of Rural Sociology where he has been appointed to full Professor.

Louis Ploch has accepted a position as Assistant Professor of Rural Sociology at the University of Maine.

Gordon Cummings was appointed Assistant Professor in the Department of Rural Sociology on February 1. His major responsibilities are in connection with extension work.

The University of Kansas. Orry C. Walz, part-time instructor in Sociology, has accepted a temporary position of associate professor of sociology at East Central State College, Ada, Oklahoma. He received his Ph.D. degree in June. Others completing the doctorate who have accepted positions are George H. Weber and Donald W. Smitherman. The former heads the Division of Diagnosis and Treatment of the Minnesota Youth Conservation Commission; the latter is marriage counsellor for a medical clinic at Wichita, Kansas.

Through a grant from The Mrs. John S. Sheppard Foundation, Inc., the Research Committee of the Department will undertake a study of drinking habits of rural and urban samples of Kansas High School students. The study will be part of a national project initiated by the Hofstra Research Bureau, Hofstra College, and will be coordinated by Matthew N. Chappell. Marston M. McCluggage will direct the Kansas study, assisted by E. Jackson Baur, Carroll D. Clark, and Charles K. Warriner. The State Commission on Alcoholism will share in the sponsorship.

Charles K. Warriner, Assistant Professor, devoted half his time the past year exploring problems in the theory of social organization through research in a medium-sized hospital at Kansas City, Missouri. He returned to full-time teaching duties this year.

E. Jackson Baur, who was on sabbatical leave the past academic year pursuing a research study of the decision-making processes of boards of voluntary associations in Kansas City, returned to full-time duty in the Department.

Carroll D. Clark, Chairman of the Department of Sociology and Anthropology, is on sabbatical leave during 1954–55. He holds a Study Grant from The Fund for Adult Education and is making Cornell University his headquarters throughout the year while studying adult education programs in the East.

Marston M. McCluggage, Professor of Sociology and Human Relations, is acting chairman of the Department during Dr. Clark's leave of absence. The past year he served as acting chairman of the Department of Human Relations while the chairman, Hilden Gibson, was on sabbatical leave.

E. Gordon Erickson has been promoted to Associate Professor of Sociology.

Carlyle S. Smith has been promoted to Associate Professor of Anthropology.

University of Missouri. Noel P. Gist assumed the chairmanship of the Department of Sociology and Anthropology, replacing Toimi E. Kyllonen who is spending this year in Finland on a Fulbright.

C. Terence Pihlblad has returned from a year's research on migration in Norway. In August he participated in a Conference on the Teaching of the Social Sciences in the Secondary Schools.

Robert F. G. Spier, who received his Ph.D. in Anthropology from Harvard University June, 1954, is Assistant Professor of Sociology and Anthropology in the Department.

New instructors in the Department include John T. Mitchell, James L. Lowe, Peter Kong-Ming New, and Robert Joseph Dwyer.

Irwin Deutscher is with Community Studies of Kansas City working on a two-year study of the metropolitan nurse.

Wayne Wheeler is at the College of Emporia.

State University of New York, New Paltz. Eugene Link was awarded a Fulbright Scholarship to teach in India beginning last July. He is at Annamalai University in southeast India.

North Carolina State College of Agriculture and Engineering. James W. Green, Assistant Professor, was granted a leave of absence to accept a temporary appointment in Pakistan as Rural Sociology Advisor with the Foreign Operations Administration, United States Department of State. Dr. Green will be away until August 31, 1956.

C. Horace Hamilton, Head of the Department of Rural Sociology, attended the World Population Conference in Rome, August 29 to September 10.

Frederick L. Bates, who received his Doctor's degree in sociology at the University of North Carolina at Chapel Hill in June of this year, has accepted a temporary appointment as Assistant Professor in the Department of Rural Sociology as a replacement for Dr. Green.

University of Notre Dame. E. K. Francis has been promoted to the rank of Professor. Since January, 1953, he has been serving as director of the Social Science and Foreign Affairs Project at Notre Dame, concerned with some social aspects of higher education and study programs in the social sciences. Dr. Francis was awarded recently a grant by the American Philosophical Society for the continuation of field work among the Spanish-Americans in the Upper Rio Grande Valley and of research in the archives of the Archdiocese of Santa Fe.

The University of Pennsylvania announces the inauguration of a program leading to the degree Doctor of Philosophy in City Planning. The new program supplements the present professional course offered by the Department of Land and City Planning and the research activities of the Institute for Urban Studies. It will provide opportunities for advanced research training for students in the fields of city planning, urbanism, and civic design. The new program will be administered by a special committee of the Graduate School of Arts and Sciences.

Inquiries may be addressed to the Chairman, Committee on City Planning, School of Fine Arts, University of Pennsylvania, Philadelphia 4, Pennsylvania.

Pomona College. Ray E. Baber, Chairman of the Department, is in Japan for the academic year 1954–55 on a Fulbright Research Award. He is studying the changes taking place in the marriage and family patterns of that country. During his absence, Henry Zentner, who did his doctoral work at Stanford University, has been appointed Acting Assistant Professor.

Alvin H. Scaff has returned from a year in the Philippines, on a Fulbright Research Award, where he studied the Huk rebellion and the resettlement program.

University of Puerto Rico. J. Mayone Stycos has been awarded a post-doctoral fellowship in social demography by The Population Council Inc. to study at the University of North Carolina.

Arthur J. Vidich Jr. of Cornell University and Beate Salz of the University of Chicago have accepted joint teaching and research appointments in sociology and in the Social Science Research Center for 1954–55.

The University of Rochester. Joseph B. Gittler, Professor of Sociology at Iowa State College, was appointed Professor and Chairman of the Department of Sociology of the College of Arts and Science, University of Rochester. He began his new duties in September. Dr. Gittler will help to establish a new group relations program at the University.

University of Washington. Aubrey Wendling, who received his Ph.D. in the department in the summer of 1954, was appointed Assistant Professor of Sociology at San Diego State College, beginning September, 1954.

Melvin L. DeFleur, who completed his doctorate in the summer of 1954, was appointed to an instructorship at Indiana University.

Louis Orzack, of Indiana University, is serving as Instructor in Sociology for the year 1954–55.

University of Wisconsin. Howard Becker is again chairman of the department during 1954–55, replacing William W. Howells, who accepted an appointment at Harvard.

Gabriel Lasker of Wayne University is Visiting Assistant Professor of Anthropology for 1954–55.

E. E. LeMasters, who was a Lecturer dealing primarily with marriage and the family in 1952–54, left to be the chairman of the department at Beloit College.

Frank L. Hartung of Wayne University is Visiting Professor of Sociology for the present year.

Harold F. Kaufman of Mississippi State College was Visiting Lecturer in Rural Sociology for the summer session at Madison.

During 1954–55, Marshall B. Clinard is the Fulbright Research Professor at the University of Stockholm to study the theories, extent, and nature of crime in Sweden.

Hans Gerth is spending the academic year in Germany on a Fulbright research award.

Morton Rubin has a Woodrow Wilson Fellowship at Princeton for research on the Middle East during 1954–55. This last summer he did field work in Israel.

John Flint and Harrison Trice are Acting Instructors for 1954–55. John Wahl has been made Instructor in the Extension Division.

John L. Miller was Director of the Conference on Alcohol Studies held here in June.

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The *Review* has just received word of the death of a former member, Professor McQuilkin DeGrange, of Dartmouth College, on December 28, 1953. Professor DeGrange was a specialist in the history and theory of sociology, and an expert on Comte.

Lester Martin Jones, head of the Department of Sociology at De Pauw University until his retirement in June, 1952, died in Florida on June 16, 1954. Dr. Jones studied under Giddings at Columbia, and under E. A. Ross at Wisconsin, where he earned the Ph.D.

Albert Thurber Walkley died July 4, 1954, at his home in Marblehead, Massachusetts. He studied sociology at Columbia University, and later served as a research associate at the Research Center for Human Relations, at New York University.

BOOK REVIEWS

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Measuring Group Cohesiveness. By LESTER M. LIBO. Ann Arbor: University of Michigan Press, 1953. ix, 111 pp. $2.00.

"Attraction-to-group," the concept on which Libo focuses in this study, denotes the group's attractiveness for each *individual* member. It differs from the more frequently discussed concept of "group cohesiveness" which is usually defined as the group's attractiveness for *all* its members.

The monograph begins with a useful discussion of the relevant research on this subject. The author concludes that in the past "Sequentially, the arousal of individual attraction and group cohesiveness in laboratory groups can be conceptualized as follows: (a) the individual with a certain degree of need tension relevant to a potential goal-object, the group, interacts with (b) the potential goal-object whose stimulus characteristics with respect to the probability of its serving to satisfy individual needs are specified (experimental manipulation), resulting in (c) a certain amount of attraction to the object (attraction-to-group), and (d) a certain valence of the group for all its members, at present a value obtained from an operation involving all the individual attraction-to-group values (cohesiveness)."

"Attraction-to-group" or the resultant force acting on a member to remain in his group is hypothesized to be a function of the degree to which membership in the group is actually or potentially need-satisfying. One must keep in mind that Libo is focusing only on those sources of attraction which stem from the valent characteristics of the group itself. The present formulation of the concept is based on the assumption, therefore, that the forces toward membership are driving (i.e., people need to remain in the group), not restraining, forces and that it is the valent group in a natural situation, rather than other coercive or external factors, which is to arouse an individual's need to belong to the group. Consequently, the results, Libo points out, are not relevant to groups where pressure to remain is due to (a) a sense of obligation or duty, (b) prohibitions against leaving the group, and (c) fear of exclusion or rejection from the group. For the "field-oriented" researcher studying already existing groups, these are interesting limitations. One may ask, how many "actual" groups exist without any of these characteristics? It is to Libo's credit that he makes explicit the limitations of his research.

Next, Libo reviews the most frequently used laboratory approaches to produce differences in attraction in laboratory experiments. Briefly, they are (a) the use of experimental instruction or suggestion, (b) planned assignments of subjects to attractiveness-relevant activities, (c) the simultaneous use of instruction and assignment, (d) the manipulation of group structure or process, and (e) the simultaneous use of assignment to activities and manipulation of group structure and process. After a critical examination of these, Libo chooses a method to create "attraction" for his experimental subjects to their experimental groups, that presumably incorporates the best of the above methods. Because of space limitations we will not discuss the experimental method chosen. We would like to focus on the research Libo conducted to measure and validate "attraction-to-group." This, Libo points out, is one of the main purposes of his research.

Libo describes research conducted on two methodological problems: (a) perfecting a behavioral criterion which can be used to validate either experimental manipulations of group attractiveness or measures of attraction-to-group, and (b) constructing a measure of attraction-to-group which was less obvious in its intent than a questionnaire. To accomplish the first aim, a "locomotion measure" was developed. To accomplish the second aim, a projective technique called The Group-Picture-Impression (G.P.I.) test was developed.

Briefly, the "locomotion measure" was obtained by a rather ingenious experimental technique which gave every member a free choice as to whether he wanted to remain in the group and continue its existence, or leave the group and permit it to disintegrate. The hypothesis was that those members who belonged to the highly attractive group would ask to stay and those who belonged to the group with low attraction would ask to leave. The hypotheses were substantially confirmed.

The G.P.I. was also administered to the subjects. The test was designed to elicit and measure the more subtle needs that go to make up an individual's attraction to the group in which he was sitting at the time of the test administration. Each subject was given a booklet in which appeared three pictures about which short

stories were to be written on the answer sheet provided opposite each picture. The answers were then analyzed and scored. The higher the score, the higher the individual's attraction-to-group.

For those who may be interested in using the test, Libo presents an intensive discussion of (a) the theoretical foundations, (b) the nature of the instrument, (c) the method of scoring and coding the answers, and (d) the reliability and validity tests conducted to ascertain the scientific accuracy of the test.

The G.P.I. test was found capable of discriminating (1) between subjects assigned in the high experimental conditions and those in the low, (2) between subjects who stayed in their groups and those who did not. However, it is interesting to note that Libo also administered a questionnaire to each subject which also tapped the individual's "attraction-to-group." The questionnaire was found to be, in some areas, a better predictor of behavior than the more elaborate projective technique. Such results help confirm the hypotheses that projective techniques may not be necessary when we are dealing with those needs that relatively normal people manifest and which they are not defensive about. It may be that a projective technique is more necessary for abnormal people whose personality structure is "loaded" with defense mechanisms.

Libo concludes, "In demonstrating that attraction-to-group can be expressed in the special kind of perceptual-cognitive-motor behavior involved in responding to a projective technique, as well as noting its expression in questionnaire and locomotion behavior, we have seen the variable assume potential status as a major motivational concept in social psychological theory. Attraction-to-group is measurably manifested at both the "public" and "private" levels of behavior. In demonstrating that a projective technique can be used to measure the characteristics of an object in the social psychological field, in addition to its usual application as a measure of enduring characteristics of the person, we can see an enlargement of the potential measurement applications of projective approaches."

CHRIS ARGYRIS
Yale Labor and Management Center

The Voter Decides. By ANGUS CAMPBELL, GERALD GURIN and WARREN E. MILLER. New York: Row, Peterson and Company, 1954. xiii, 242 pp. $4.75.

The quantitative study of political behavior by social scientists in the United States has followed two main approaches. The first has utilized available voting statistics and has related these to demographic characteristics of the districts from which the votes come. The works of Stuart Rice, Harold Gosnell, Louis Bean, and the more recent work of V. O. Key are examples of this approach. The second method that has been used is the opinion and attitude survey. *The Voter Decides,* a report on the survey conducted by the Survey Research Center of the University of Michigan in the 1952 election is a recent and prominent example.

In *The Voter Decides,* the Michigan group presents its material in two main sections. Part One gives us a general description of the election in comparison with the election of 1948, on which the Survey Research Center also conducted a study. It deals in turn with: a comparison of the two elections in respect to participation and vote switching; a description of the degree of participation as indicated by campaign-related actions on the part of citizens as well as their votes; the role which the candidates as personalities played in the campaign as distinct from their role as party representatives; and a tabulation of all demographic factors related to participation and candidate choice.

Whereas Part One is largely descriptive; Part Two is analytical in approach. It concentrates on what the authors call the "intervening variables of attitudes, perceptions and group loyalties," and treats these variables as they relate to aspects of political behavior. For this analysis Campbell and associates employ three analytical concepts—*party identification, issue orientation,* and *candidate orientation.* The first of these, *party identification,* is measured by the self-classification of the survey respondents into strong Democrats, weak Democrats, independent Republications, etc. (It is shown that this classification is relatively stable prior to and during the campaign, and that it has a high relationship to questions on party loyalty, parents' political preferences, party of first vote and, of course, to voting in the 1952 election.) *Issue Orientation* has the three components of sensitivity in respect to issues, the amount of involvement people have in issues (as measured by the number of issues on which they take a stand), and the direction of their orientation. The third major concept, *candidate orientation,* is similarly divided into factors of intensity and direction—the extent of orientation to candidates is based on a count of the number of references to either candidate; the direction of orientation is measured through an index of favorable and unfavorable references to Eisenhower and Stevenson.

Having presented these three concepts, the authors now interrelate them through a series of cross-tabulations, showing first that although they are all correlated, each has some degree of independent force when the others are held constant, and that in combination they become highly related to the level of participation in the campaign and to party voting. It is shown that of persons who are motivated by all three factors, with no conflict between them, nearly all participate in the election. Similarly, a combination factor favoring a candidate almost always produces a vote for that candidate.

The Michigan survey, on which *The Voter Decides* is based, involved two waves of interviews with the same respondents. It thus follows the pattern of several previous studies—Michigan's own work on the 1948 election, the Columbia University-NORC study in 1944, and the studies done by various regional polling organizations in the 1950 congressional elections. Its most prominent ancestor is, of course, the Ohio study on the 1940 election by Lazarsfeld, Berelson and Gaudet *(The People's Choice)* which has been followed up in Elmira, New York in the 1948 election.

It is to the credit of the Michigan group that they have revived one of the significant concepts developed in the earlier work of Lazarsfeld and associates. *The Voter Decides* makes considerable use of the idea of conflict as a factor mitigating the influence of motivational forces toward participation and toward candidate choice. This is, as Campbell and his associates point out in their summary chapter, close to the idea of cross-pressures developed in *The People's Choice*. The earlier work dealt with both demographic cross-pressures, such as conflicts between predispositions due to religion and economic level, and with cross-pressures in the area of intentions and attitudes. The Michigan work concentrates on conflicts existing between their three analytical concepts. In both cases the finding is the same—cross-pressures (or conflict) reduce participation in the election.

In general, the large contribution of the Michigan work lies in their detailed elaboration of subjective variables. There is considerable treatment here of the extent and direction of feelings on issues, parties and candidates. In addition to the three concepts discussed above, two more are treated in the appendices of the volume—*sense of political efficacy* and *sense of citizen duty*. Although none of these concepts could be considered basically psychological in the sense that they depend upon underlying dynamic factors of personality, referring as they do to specific attitudes in the course of campaigns, they do serve as a further step toward the discovery of psychological regularities in political behavior.

ROBERT T. BOWER
The American University

The Achievement Motive. By DAVID C. MCCLELLAND, JOHN W. ATKINSON, RUSSELL A. CLARK, and EDGAR L. LOWELL. New York: Appleton-Century-Crofts, Inc., 1953. xxii, 384 pp. $6.00.

This book is presented as a summary report of research conducted on the "achievement motive" during the period from 1947 to 1952. The results are presented in a tentative way due to the possibility that more recent investigations of other aspects of the "achievement motive" by the authors may force a different interpretation. The experiments according to the authors, here reported were conceived and carried out more or less free from preconceived motivational theory, and theoretical position which they came to uphold is said to have evolved from their experimental findings.

There are two purported aims of the book: to bring together diverse research findings and presentation for evaluation, and to stimulate possible use by others of the experimental technique employed in their investigations of the "achievement motive."

The authors review and briefly evaluate a few of what they consider currently important theoretical notions relating to motivation. After discussing the shortcomings of motivational theorizing in the "survival," "stimulus intensity," and "stimulus pattern models," they define and elaborate the "affective arousal model" in terms of which their own theoretical position is taken. Motive is defined as "the redintegration by a cue of a change in an affective situation," "the learned result of pairing cues with affect or the conditions which produce affect." All motives are learned, in the scheme of the authors. Biological needs are therefore not considered as motives, although it is thought such needs must in some way be related to motives "through the capacity of many biological needs to produce affective arousal." And it is affect which serves as the basis of all motives. The determinants of negative and positive affect are discussed at some length. Borrowing the concept "adaptation level" from earlier writers, this theoretical notion is extended to include expectations. In general, it is the direction and extent of discrepancy between the adaptation level and perception that determines whether the resultant experience shall be pleasant or unpleasant. The conception of adaptation level in terms this broad permits a meaningful application of this theoretical notion to phenomena at the physio-

logical level or to positive and negative experiences derived from success and failure. The adaptation level may be acquired, but affect is the "innate result of certain discrepancies between expectations and perceptions."

Eight of the ten chapters of the book are given primarily to a discussion of experimental procedure, technique, and results. The general procedure for determining the criterion variable consisted of inducing different degrees of the "achievement motive" and then measuring their differential effects on fantasy as expressed in short stories written by subjects in reaction to certain TAT cards or short descriptions of situations. The results of the several experiments clearly show that operation of the "achievement motive," in varying degrees, may be ascertained through its differential effects on fantasy. Evidence from a few cross-cultural comparisons indicates that this holds true also in other cultures, although the specific content of the fantasy may vary in line with cultural themes. There seems little question that valid and reliable results are obtainable through this approach.

This last statement acquires special significance when viewed in the light of certain developments in the study of motivation, which the authors evidently failed to consider. One of the most clear-cut trends in American psychology has been, since the 1930's, the investigation of various motivational factors through their influence on psychological activity, especially perception and judgment. Especially in the 1940's was there a deluge of such studies. The method of studying motivational factors through their influence on "cognitive" processes consists of experimentally arousing one motive or another and presenting the subject an unstructured stimulus situation in which latitude is provided for the expression of the influence of the particular motive. This method has been specifically applied to the investigation of various motivational factors, including for example, social and ego attitudes, hunger, and even expected achievement on a given task. The authors' claim for their method of studying the "achievement motive" as "a relatively new way" is not wholly consistent with the wealth of earlier studies in this area. All the experiments on the "achievement motive" offered in the present volume may be taken as special applications of the established procedure of investigating motives through their influence on psychological activity in an unstructured situation. The specific motive in the case of the studies of the present authors was the "achievement motive"; the specific unstructured stimulus materials were TAT cards and descriptions of a situation about which the subjects told a story. It is rather well established that as the stimulus becomes more ambiguous motivational states operative at the particular time become more influential in determining the psychological outcome. Fantasy can be elicited only in a stimulus situation with a minimum of objective anchorage points or reality constraints. In such an unstructured situation we should expect that motivational factors would be more clearly revealed. Fantasy resembles judgment of future events, experimental studies of which have shown that in such an ambiguous situation the fears, hopes, expectations, etc., of the participants are clearly revealed in their predictions.

In view of the previous work of the senior author particularly, it would be expected that ego development and functioning would find a place in the explanation of the acquisition and operation of the "achievement motive." Although brief reference is made to some cultural differences in the importance attached to achievement, nowhere do the authors consider this problem in relation to role and ego development, to which it must ultimately be linked. Instead, they claim to have been guided by influences coming from two main sources: psychoanalysis and experiments on animals. Actually it is quite difficult to see a very high relationship between experimental behavior of animals and the "achievement motive" in man. Even in the specific experiments reported in this volume, any leads gained from animal experimentation are not readily manifest.

The value of this book lies in its contribution to accumulating experimental results along the line of studying motives through their influence on "cognitive" processes, and also in its presentation of a refinement in the quantification of such influences on fantasy.

O. J. HARVEY
University of Oklahoma

Social Implications of the 1947 Scottish Mental Survey. (Publications of the Scottish Council for Research in Education, XXXV). By JAMES MAXWELL. London: University of London Press Ltd., 1953. xxiii, 356 pp. 10s. 6d.

When the Mental Survey Committee of the Scottish Council for Research in Education repeated in 1947 the 1932 survey of the intelligence of eleven year old Scottish school children, it extended the scope of the inquiry by collecting certain additional physiological and sociological data on a random ten per cent sample of the children. An earlier volume [*The Trend of Scottish Intelligence* (1949); see review in *ASR* 15 (1950) 149] described in detail the methods used in carrying out the

survey. The present volume analyzes for the sample of 7,380 children the interrelationships of social background factors (father's occupation, occupancy rate of dwelling, mother's age, family size, location of home, migration, and evacuation during the war) with intelligence and with height and weight. Special analyses are made of high and low scorers, and of twins.

The sample is almost impeccable. The text is concise and its points supported by simple tables and charts. The Appendix, comprising almost half of the volume, gives in full the basic tabulations and the computations so that each interpretation can be checked and the data remanipulated if desired. So much detail was reported to facilitate exact comparisons with future surveys, but it also gives this volume immediate usefulness as exercise material in research methods and statistics courses.

Some of the more important findings are as follows. The tendency for average intelligence test score to decrease with increase in family size persists through all levels of father's occupation, all occupancy rates, and all ages of mother. There is a similar, though somewhat less marked, negative correlation between height and weight and family size which also persists when each environmental condition is held constant. Physique and intelligence both vary as expected with environmental conditions, but intelligence score varies more with social conditions than do height and weight, and physique and intelligence score are not closely related to one another. Between 1932 and 1947 average height and weight of eleven year old children apparently increased relatively more than the improvement in average intelligence test score.

The author concludes that the differences in social conditions probably accentuate the relationship between test score and family size but they do not account for it, that is, he implies that the higher than average intelligence of children in small families is basically due to genetic selection. Children in the various social conditions have been selected to a considerable extent by parental intelligence; selection by parental height and weight is of lesser degree. The need for much more information to solve the paradox of apparent dysgenic selection along with evident improvement in physique and intelligence of eleven year old children is noted.

The only criticism that this reviewer has of Mr. Maxwell's analysis is that the data could have been exploited more fully. For example, whether the association between family size and intelligence persists, when several environmental factors are simultaneously held constant, could have been tested within certain small, carefully matched groups.

This book makes important contributions to knowledge of the association between measured intelligence and social conditions. It is to be hoped that not only will inferences about causal sequences be strengthened by evidence from a regular series of surveys, but that intensive studies especially designed for testing causal hypotheses will be undertaken.

RUTH RIEMER
University of California, Los Angeles

The Philosophy of Symbolic Forms. Vol. I. Language. By ERNST CASSIRER. New Haven: Yale University Press, 1953. xiv, 328 pp. $5.00.

Ernst Cassirer was the last survivor of the great German philosophic tradition which began with Immanuel Kant. Born in Breslau of a prosperous family in 1874, he studied first jurisprudence and then philosophy and literature at Berlin, Leipzig, Heidelberg, and then Berlin again. In the summer of 1894 he took at Berlin a course in Kant given by a brilliant young *Privatdozent* named Georg Simmel who happened to remark, one day, that "Undoubtedly the best books on Kant are written by Herman Cohen; but I must confess that I do not understand them." Cassirer immediately bought the books and two years later moved to Marburg to attend Cohen's lectures and seminars and to become the most prodigious disciple of "the Olympian," as Cohen was then called. In two years more he had submitted his dissertation on Leibniz to the philosophical faculty at Marburg and startled his examiners by what his biographer (Dimitry Gawronsky) calls "the immensity of his knowledge and brilliancy of his understanding."

After receiving his doctorate *summa cum laude* he devoted himself to a general history of epistemology, the first two volumes of which appeared in 1906 and 1908. It was this work which made his early reputation and which led, over the opposition of Stumpf and Riehl but with the support of Dilthey, to his appointment as *Privatdozent* at Berlin. His later academic posts included professorships at Hamburg, Oxford, Goeteborg, Yale, and, finally, Columbia, where he was teaching at the time of his death, on April 13, 1945.

The many learned books whose publication punctuates his distinguished career cannot even be mentioned here. Between the years 1923 and 1929, however, he published in three volumes the *Philosophie der symbolischen Formen,* the first volume of which is now translated into English by Ralph Manheim and introduced by Charles W. Hendel. In spite of the unusual lucidity of Cassirer's style, any attempt to

explain the theory of symbolic forms would be a formidable task, and one cannot hope for success in a few sentences. This is particularly the case because it comprises not only a "correction" of the Kantian epistemology but also a philosophy of culture.

Let us begin, nevertheless, by recalling that the Kantian forms impress themselves upon the data of phenomenal experience and thus serve to order, to arrange, and finally to transform sensory intuitions into judgments. The forms are the categories; they categorize but do not create. They are passive rather than active; they accept phenomena and arrange them, but they do not supply phenomena nor do they expand the range of knowledge. It was Cassirer's brilliant insight that the categories themselves or, as he called them, the symbolic forms, have a creative synthetic power and that they are not only regulative but constitutive factors in the construction of knowledge. His highly original achievement consists in what Susanne K. Langer has characterized as this "emphasis upon the constitutive character of symbolic renderings."

At the risk of injustice to its epistemological rigor, we may describe the theory in even simpler terms. Symbolic forms functioning as concepts both denote and connote. Attention to the former of these functions leads epistemologically to the troublesome problem of the *Ding-an-sich* and induces a sceptical view of language. If one can show, on the contrary, that forms both connote and create, then language becomes the vehicle of knowledge and, in a sense, the motor as well.

This is the problem to which Cassirer addressed himself in his *Philosophy of Symbolic Forms,* treating in the first volume the philosophy of language, in the second mythical thought, and in the third the phenomenology of knowledge. In the first volume we gain an impression not only of the tremendous scope of Cassirer's erudition but also of the power of his fundamental insight in solving some of the problems of the cultural sciences. It would be instructive to compare his theory in general with Znaniecki's theory of culture and of cultural reality. Although Cassirer's interests are primarily epistemological, Znaniecki's primarily sociological, their modes of approach and their conclusions have points of similarity which it would be fascinating to explore.

We are especially fortunate, in short, in having this translation at the present time. Because of the earlier translation of his *Substanzbegriff und Funktionsbegriff* and his *Zur Einsteinschen Relativitätstheorie,* and because of his identification with the Marburg school of Neo-Kantianism, Cassirer has been considered in this country to be primarily a philosopher of the physical sciences. We are now able to understand that he was also a philosopher of the cultural sciences and, with the language barrier removed, can begin to appreciate his towering stature in both fields of endeavor.

ROBERT BIERSTEDT
The City College of New York

The Dynamics of Soviet Society. By W. W. ROSTOW. New York: W. W. Norton and Co., Inc., 1953. xvi, 282 pp. $3.95.

A Study of Bolshevism. By NATHAN LEITES. Glencoe, Illinois: The Free Press, 1953. 639 pp. $6.50.

The number of studies of present day Russia is impressive, but the findings of the individual studies are rather poorly integrated. Therefore, the Center for International Studies of the Massachusetts Institute of Technology asked W. W. Rostow, an economic historian, to attempt a synthesis. Mr. Rostow "read voraciously" and was convinced that among the students of contemporary Russia there is sufficient consensus to present a picture with which, in the main, most of them would agree.

The result of his labors has been the book under review which is also meant to serve as an instrument for making rational policy decisions with respect to Soviet Russia. The book is however not a digest of the existing literature on Russia; only rarely are there allusions to controversies among the experts. In general, each particular problem is presented dogmatically, sometimes with acknowledgment of particular indebtedness to the author of a standard work on the question. The reader could therefore not check whether the alleged consensus really exists; but the present reviewer believes that the author's thesis is warranted. It is noteworthy that ten years ago no such statement was possible, and it is gratifying that the scientific effort spent on the cognition of Soviet reality has not been in vain.

Mr. Rostow's book consists of two parts and a conclusion which, in actuality, is a postscript added because the major part of the writing was concluded shortly before Stalin's death. The first part is devoted to the question, through what processes has present day Soviet society become what it is, or, in the author's words, "how the various parts of Soviet's society have moved in relation to one another." The author's main contention is that the trends in Soviet history have resulted not from conscious long-term planning, but from a succession of decisions made in concrete circumstances created

by the historical course of events; this is a statement quite at variance with C. E. Carr's deterministic treatment of the same events. The key decisions are identified by the author with the choice of ultimate values, or "priorities." Top priority, from the start, was granted to power. This statement is not tantamount to saying that the Soviet rulers have been consistently motivated by the desire for power; it expresses rather the belief that, if power is concentrated in the hands of those who are "conscious" of the laws of history, large beneficent purposes would be served. The author explicitly rejects the view (dominating Ambassador W. B. Smith's well known book) that the Soviet regime is merely another example of Russian autocracy.

The top priority granted to power means two things: first, maintenance of the regime's internal controls, and only second, maximization of external power. Therefore, says the author, it is doubtful that the Soviet regime is operated by a time table for world conquest. The maintenance of inner controls has required an unprecedented bureaucratization of the instruments of power, expressed in the atrophy of the Soviets, the emasculation of the trade unions, the establishment of tight political control over the army, a peculiar evolution of Soviet ideology, especially the complete elimination of the humanistic baggage of the revolution. These phenomena were accompanied with a parallel bureaucratization of sociocultural life, including education, literature, the arts, and even religion.

The second part of the book is of greatest interest. The main peculiarity of the Soviet regime, says the author, consists in an extraordinary unification of power on the top level, but only there. Nevertheless, the political structure possesses sufficient cohesion based on the granting to its members of sufficient real income, public prestige, and a special feeling of security through identification with the total structure. Relative to the masses, the regime has permitted the resurgence of powerful elements of nationalism, both in the form of xenophobia and the maintenance of certain lines of culture tradition.

But the forces of cohesion are balanced by tensions. In addition to the weakness inherent in the political system which the author perceives in the separation of a policy making oligarchy and an over-developed bureaucracy, he discusses "general dissatisfaction" and dissatisfaction of special groups. The general dissatisfaction is generated by the role of the political police, the low standards of life, the position of religion, insipidity and unbearable repetitiousness of official propaganda, and the lack of popular participation in government. All these dissatisfactions exist, but do not create a revolutionary situation: the people of Russia are overwhelmed by the sheer problem of survival, mentally exhausted by being always exposed to propaganda and, moreover, do not yet see any "real alternative." The same is true of numerous group dissatisfactions.

The forces of cohesion and disruption are derived by Mr. Rostow from the dynamic tendencies established in the first part of the book; therefore, he believes, and rightly so, that they will remain operative in the long run, independently of the change in the power personnel. In the Conclusion, knowledge gained in the first two parts is applied to tentative prediction of domestic and foreign developments. The prediction of the former is involved and indeterminate; as to the latter, the author believes that the new masters of the Kremlin would launch a third world war only under quite exceptional circumstances.

Exactly as in Mr. Rostow's book, Nathan Leites' *Study of Bolshevism* has a dual purpose: first, increase of knowledge and understanding of facts and, second, help to Western policy makers in dealing with Communism. But the approach is quite different since Mr. Leites' work is a digest of statements ever made by Lenin and Stalin on "political strategy." The findings cannot be spectacular. First, the statements of the Communist leaders have been reproduced and interpreted hundreds of times; second, in 1951, Mr. Leites published a preview of his work under the title *The Operative Code of the Politbureau.*

There is, however, a marked difference between the two works of the same author. In the earlier one, selected political dicta of Lenin and Stalin were presented as systems of aphorisms which seemed to give definite answers to questions of political strategy. In the work under review, the attempt is made to *exhaust* the pertinent statements; the result being that, between individual items, there are many inconsistencies. Thus, the approach of the Bolshevist leaders to the main problem of history seems to include both elements of determinism and indeterminism, with no clear relationship between the two. The book even contains a short epilogue where a few tendencies of the development of the political doctrine of Bolshevism are formulated; among them, one finds the tendency to feel reality as more, rather than less, dangerous in the meaning of the possibility of "total annihilation" of Bolshevism. "Consciousness," correct knowledge of historical laws, allegedly the main advantage of Bolshevism over its most dreaded enemy, big bourgeoisie, was first ascribed to the party, then only to its top level, and so on.

The book is divided into four parts—vision, action, techniques and solution; in the reviewer's opinion, the second, on action, containing chapters on precision and realism, the control of feeling, persistence and flexibility, and the like, is the most interesting. Each chapter consists of a few sections, and in every section statements from Lenin and Stalin are confronted with excerpts from Russian thinkers (most commonly Gogol, Turgenev, Dostoevsky, and Chekhov) which are used to make conspicuous the contrast between the political strategy of Bolshevism and the typical attitudes of pre-revoluntionary intellectuals. This refutes the hypothesis that, after all, Bolshevism is merely a modification of something inherent in Russian culture.

In some places, the author tries to give to his findings more depth by reference to psychoanalytical terms. But, as he says, it is possible to reject the theory of psychoanalysis, and still find the portrait acceptable. The present reviewer agrees.

Both books are important contributions to the literature on the Soviet Union, and this is so despite the fact that their predictive value is nil. The events which followed Stalin's death could not be predicted either from the integrated knowledge offered by Mr. Rostow (as evidenced by the rather embarrassed tone of the Conclusion), or from the exhaustive compilation of the doctrine offered by Mr. Leites who, perhaps, could have summarized his book by stating that, relative to most problems, the doctrine underlying the political strategy of Bolshevism presents the trait of ambivalence.

N. S. TIMASHEFF

Fordham University

The Study of Culture at a Distance. Edited by MARGARET MEAD and RHODA MÉTRAUX. Chicago: The University of Chicago Press, 1953. x, 480 pp. $5.00.

This Manual is based on the work of the Columbia Research in Contemporary Cultures, which was inaugurated by the late Professor Ruth F. Benedict, and a series of successor projects under various auspices. The Manual presents the methods that were developed, chiefly during World War II and the immediate post-war period, for analyzing cultural regularities in the character of individuals who were members of societies which had become inaccessible to direct observation. Such inaccessibility might have arisen from war conditions, as in the case of Germany and Japan; from totalitarian rule, as in the case of Soviet Russia, Communist China and their satellites; or simply from rapid social change, of which the uprooting of the Jewish and German communities in Eastern Europe and the forcible overthrow of long dominant regimes, such as Dutch rule in Indonesia, are extreme examples.

The study of culture at a distance, as treated in the Manual, employs various approaches, chiefly work with informants and work with symbolic materials. Work with informants is based on circular processes of initiation and response, but projective tests are employed also. Symbolic materials are taken from written and oral literature (folklore) and from film production, but with limitations. It seems that qualitative analysis has been preferred to quantitative analysis throughout, and it further appears that, in the main, contemporary, not historical, documents have been considered. In brief, culture is taken as a static attribute of persons, not as a process. The methods expounded reflect strengths and weaknesses of the anthropological and psychological approaches to cultural phenomena rather than the aims and results of truly interdisciplinary teamwork. Advantages as well as disadvantages are connected with that approach.

On the positive side, anthropologists bring to the study of modern cultures the thought habit of regarding social phenomena as integrated wholes. They bring to it a trained ability of seeing in single manifestations symbols of wider significance or, in Rhoda Métraux's words, the ability to know the detail in context. Her paper on "Resonance in Imagery" (pp. 343–365), which makes these skills explicit, is one of the most thought-provoking in the Manual. The same is true of Martha Wolfenstein's penetrating contribution on "Movie Analysis in the Study of Culture" (pp. 267–281). Obviously, this approach rejects mass training of students in repetitive techniques and relies instead on personal apprenticeship with an acknowledged master of the art. Accordingly, in the organization of group research, as described for the Manual by Margaret Mead, the stress is "not on the uniformities among intelligent, highly trained individuals, but upon the unique configuration of perception, training and experience of the individual research worker" (p. 86). In this view, in which the reviewer concurs, it is held that scholars in the social sciences are not as interchangeable as laboratory technicians.

On the negative side, however, one notes too little discrimination in the use of sources and too much substitution of simplified images for the complexities of modern society. Sometimes, the authors seem to content themselves with stabs at reality here and there, assuming qualitative representativeness without proving it. No breakdown of informants as to their background has been attempted. Personality changes in emigration should have cautioned

against the use of projective tests. Similarly, the problem of representativeness of symbolic materials is hardly ever broached. For instance, upon reading Rhoda Métraux's "Note on the Spectator in French Culture" (pp. 390–397), one asks oneself whether what is described there as an inherent characteristic of French culture is not in fact representative of French middle class culture or of French middle class culture during a circumscribed period, or perhaps of European middle class culture in general. In the absence of comparative materials, judgment must be deferred. On the other hand, Martha Wolfenstein's piece on "The Soviet Image of Corruption" stands out precisely because of its careful analysis of sources and of contrasting interpretations.

Still worse is the studied disregard of history. Indeed, at this point, it is not entirely clear what the ladies and gentlemen of the Manual are arguing for or against. Do they propose to study culture as an intrapersonal and suprapersonal phenomenon or do they study individual behavior as conditioned by culture? The origin and rationale of the study of culture from a distance would point to the former, but the material presented is not conclusive. Perhaps, the intention is to study the reflection of a national culture in the minds of individual participants and to conclude from reflected culture to culture itself. If so, the image of a contemporary but inaccessible culture should have been compared with documented evidence of that culture, that is with accessible historical evidence. This has been done by Ruth Benedict in her piece on "History as it appears to Rumanians" (pp. 405–415). However, according to Geoffrey Gorer (p. 78) that sort of procedure is not necessary because "all that is attempted [in the study of national character] is the isolation and description of the motives of the majority of the population over and above those rational ones which are gratified by the operation of the institutions which historical accident and technological development have produced at a certain time." One is tempted to ask: How does he know that his informants represent the majority of the population? As to character being static and history an "accident," co-author Gregory Bateson believes (p. 367) that "the best-documented generalization in the field of psychology is that . . . the behavioral characteristics . . . of man depend on the previous experience and behavior of that individual," in other words, on a case history. However, Bateson, arguing as it would seem against himself, contrasts the development of national character to historical background. At this juncture, Margaret Mead enters the picture justifiedly pleading for as complete as possible a shedding of any knowledge that *"ain't so"* in a culture to be studied (as represented by impressions from previous travels, bits of reading, hearsay, etc.), but tossing the child out with the bath by implicity including solid historical knowledge in the anathema. This must have confused Geoffrey Gorer to such an extent that he forgot all the rules of the game. Without being prepared for it, he invoked comparative history in making a case for the maintenance of the imperial institutions of Japan. When he says (p. 402) that "attacking the Mikado would be like attacking the Pope for medieval Catholics," he reveals his ignorance of the history of the Papacy. It would have been better, (a) if he had forgotten his knowledge of the things that *"ain't so"* (Mead, p. 47) and (b) if he had consulted recognized authorities in the field (Gorer, p. 79).

In conclusion, it should be said that "The Study of Culture from a Distance" is a valuable contribution to methodological literature in the social sciences. The combination of generalized statements and concrete exemplifications is an excellent educational device. The attached bibliography serves the student who wants to familiarize himself more fully with the work of the authors. But the contributions are uneven. Some of them, like those of Ruth Benedict and Martha Wolfenstein, are classical statements. Also, much of what editors Margaret Mead and Rhoda Métraux have to say is of top rank. Other contributions, while descriptively interesting or analytically convincing, such as some of the interviews with informants or the papers of Leites and Haimson, are lacking in interpretation or are uncertain in application. Still others betray naiveté in the use of sources. An example is Sula Benet's exposé on "Courage: Cumulative Effects of Sacrifice," which purports to reveal Polish national character, but quotes for confirmation a poem by Juljan Tuwim which, if anything, is far more revealing of Jewish than of Polish character. On the whole, the impression is strengthened that social anthropologists have a lot to teach other social scientists, but also that they have a lot to learn themselves.

WERNER J. CAHNMAN
Forest Hills, New York

Colour and Culture in South Africa. By SHEILA PATTERSON. London: Routledge and Kegan Paul Ltd. (Grove Press, distributor), 1953. vi, 402 pp. $6.00.

Sheila Patterson, an English sociologist, has in this volume written a splendid study of the status of the Cape Coloured People within the social structure of South Africa.

Practically all of the recent analyses of the complex racial problems in South Africa have

concentrated upon the dramatic aspects of the *apartheid* movement as it affects the 8,500,000 Bantu-speaking Africans. Patterson's study concerns rather the 1,078,000 Coloured people whose intermediate position in the Union is an especially unhappy one, not only because there is little cohesion and leadership within the group, but also because the struggle for civil liberties has been directed primarily toward rights for the larger Native group.

The Coloured people arose in the Cape Colony during two centuries from the mingling of whites, Malay and other slaves from Asia, Hottentots, and smaller non-white groups. Thanks to many circumstances, especially the fairly liberal attitude of the English settlers in the Cape in the nineteenth century, the discrimination against Coloured people was slight. The *apartheid* policy of the Nationalist government, however, is steadily undermining their privileged position. Patterson examines their historic position and their present status.

The Coloured group is not a "community": diverse origins, historical experience, local tradition, the growth of social classes among them, have prevented any sense of internal cohesion. Even the attitudes toward present governmental policies are divisive. Patterson has tried, therefore, to do for these people what Myrdal did for the Negroes in the United States: to analyze social, political, economic, and educational status; recent changes and their causes; relations with other groups in the Union; and current trends.

She shows the patterns of differentiation and discrimination in five areas: politics, the administration of law, economic life, social services (education, health, housing, social welfare), and "social life and relationships" (recreation, religion, and personal relations). Her study, made over a period of almost four years, is fully documented, and is all the more remarkable because of the dispersion of the Coloured people. It provides not only a useful handbook, with a wealth of detail, but also a brilliant revelation of the complexity of prejudice, racial attitudes, and discrimination in South Africa. Her final chapter on the myths and stereotypes by which the white people support their present attitudes, and upon the responses of the Coloured people to their ascribed status, is penetrating in its insights.

Patterson relies heavily upon MacIver for her sociological analysis, and makes frequent allusion to the findings of Dollard, Warner, Wirth, Linton, and other American social scientists.

The only criticism to be made of the book is that its notes are segregated from its text. Since there are 180 pages of notes and appendices appended to 193 pages of text, it is apparent that much valuable material does not appear in the text. It is exasperating to have to search in other parts of the book for the always illuminating comment upon the text.

This volume, appearing in the International Library of Sociology and Social Reconstruction (founded by Karl Mannheim), is highly commended to all students of racial relations.

JAMES G. LEYBURN
Washington and Lee University

Israel Between East and West. By RAPHAEL PATAI. Philadelphia: The Jewish Publication Society of America, 1953. xiv, 348 pp. $4.50.

Modern Jewry's program of restoration in the Holy Land has long held the interest of Western social scientists. An outstanding example of this attraction was Dr. Arthur Rupin, a European sociologist who early settled in Palestine and there exerted a large influence on the direction of land policies and community formation of the Jewish colony.

Since 1948 and the emergence of Israel as an independent state, there has been a steady traffic of American sociologists and psychologists to the new country, drawn both by its leaders' receptivity to social science and by its wealth of researchable social phenomena.

The present volume comes as the first monograph in English to report extensive research conducted on the Israeli social scene. To this distinction must be added the fact that the author is a European trained cultural anthropologist who has lived and worked in the Holy Land since 1933. Accordingly, Professor Patai brings to his report the special advantages of long first-hand observation as an "insider," and the perspective of anthropology's comparative approach.

The book's title is somewhat misleading in that the study focuses on Israel as a newly fired melting pot of highly diverse strains of immigrants. In the problems posed by large immigration movements, the parallels between Israel *circa* 1950 and the United States *circa* 1900–1910 are striking indeed. But of course there are also many significant differences.

Common religious kinship aside, Israel's Jewish population today is split into two disparate cultural traditions: the European exemplars of Western culture, in particular of its middle class variant, and the representatives of the culture of the Middle East who have come out of submerged socio-economic depths unknown to the West in modern times. Such diversity, approaching polarity, probably exceeds anything witnessed in the United States.

Professor Patai documents the specifics of this polarity, from the large qualitative differences

in cultural "themes," to their corollaries in birth rates, life expectancies, occupational distributions, etc. Inevitably, he finds the adaptation of these two groups to each other to be one of social distance and mutual isolation. As to the outcome of the cultural interaction, he sees ample evidence that here, as elsewhere, time is on the side of ascendance of the Western modes.

Dr. Patai is not content to confine his book to descriptive reporting. As an anthropologist he is no defender of Western culture in all its facets. Moreover, in the culture of the Middle East he recognizes qualities, especially in its esthetic aspects, that would enrich the cultural synthesis he foresees as Israel's role at the crossroad of East and West. Nor does he hesitate to face up to the action and policy implications of his observations, addressing himself specifically to the pitfalls and opportunities that lie before Israel's leadership.

American sociologists will find this an informative and challenging book (although they may not agree with all its value judgments) because it is our only fully documented report on Israel's population composition and its sociocultural problems, because it contributes to the sparse literature attempting evaluation of the broad cultural tapestry of which America is a conspicuous part, and because it boldly seeks to enlarge the scope of social science by pointing alternative directions of social change in an area of great historical and contemporary interest.

LEO SROLE
Cornell University Medical College

Hebrew Marriage, A Sociological Study. By DAVID R. MACE. New York: Philosophical Library, 1953. xv, 271 pp. $6.00.

This thoughtful and thought-provoking book is the product of some fifteen or more years of study and thought arising out of a conviction that marriage in our western culture is facing a serious crisis and that in order to meet such a crisis successfully one has to know the origins of marriage, its developmental history, as well as the challenges it has met and must continue to meet. The author, who was for a number of years at the head of the marriage counseling movement in England and who is now a member of the faculty of Drew University, decided to prepare himself to meet, or at least help meet, the challenges which he saw in the offing.

He became convinced, also, that most existing studies of marriage did not begin far enough back because in his opinion the concepts relating to marriage which are based upon the New Testament contain many foreign and in fact pagan elements. It was his profound conviction that before one can understand the basic foundations of the truly Christian elements in marriage one must know the Hebraic elements which are such an important part of Christianity because Christ and his disciples knew and based themselves upon the Hebraic practices and principles which were part and parcel of their lives. Hence it was to a study of the Hebraic ideas and ideals of marriage that the author first devoted himself, in the hope that once he fully mastered these he could then devote himself to the other aspects of his problem. A heavy schedule of work, both theoretical and practical, made it impossible for him to adhere to his original program and he decided to publish the work he had done on the Hebraic background so that other scholars might have the benefit of his studies. Hence this book.

It is unfortunate that he could not complete his work. To view Hebrew Marriage only from the standpoint of the Old Testament is to see but one aspect of the situation. To be sure, from the author's standpoint, desiring as he did to study Hebrew marriage only as a background for a consideration of Christian practices, this might have sufficed. But as a complete statement of Hebrew practices it is quite inadequate. For no study of Hebrew concepts of marriage, sex, morality, family relations, etc., can possibly be complete without a careful study of the Talmud which is the storehouse of Jewish traditional practices. However, this was not essential to the author's purpose and we can judge his work only by the goals he had set for himself.

The book is divided into three parts: an "Introduction" setting forth the purpose of the study and the different marriage and kinship patterns; "Part One, The Early Hebrew Period," consisting of five chapters which outline the structure of early Hebrew society and its marriage practices and "Part Two, The Old Testament Period" (seven chapters), detailing the marriage practices during the Old Testament period, the family relationships, attitudes toward sex, and sexual uses and abuses. There is also a section giving the "Conclusions" in which the author presents his findings and conclusions, which are interesting even though not always convincing.

Among the latter may be mentioned the view the author espouses that the Hebrews were "from the beginning essentially monogamus, both in theory and practice." Space does not permit a discussion of this problem in a review but it may be doubted whether the author is correct on this point. Much more acceptable, though not entirely so, is his view that the Hebrews had "an essentially clean conception of sex" which, in itself, made for a "notable absence in

the Old Testament of any kind of sexual asceticism." Here one would have to give careful consideration to the sex-taboos and the part they played in subsequent Hebrew society before arriving at a final conclusion.

The author does a great deal to clear up various misunderstandings and misconceptions. In this way the book makes an important contribution. One cannot but regret that he could not proceed with the task he originally envisioned for himself. For if he had done the entire job with the careful attention to scholarship and objectivity which this volume indicates, we should have had a very comprehensive and definitive study of marriage customs and practices as influenced by the Judeo-Christian tradition.

M. J. KARPF

Beverly Hills, California

Older People. By ROBERT J. HAVIGHURST and RUTH ALBRECHT. New York: Longmans, Green and Co., 1953. xvi, 415 pp. $5.00.

An introduction to social gerontology represents a new venture in sociological writing. Stimulated, in part, by the Social Science Research Council's memorandum on Social Adjustment in Old Age, there has been an increasing number of investigations into socio-psychological and sociological aspects of aging and old age. Much of this research has been done under the aegis of the Committee on Human Development at the University of Chicago, Dr. Havighurst, chairman.

Older People, in a way, represents a synthesis of results of the Committee's investigations together with certain national data from the census and other sources. Main reliance is placed on the findings of an intensive study of Prairie City, a typical midwestern small town. The first half of the book is a discussion of the problems of older people and social attitudes toward them and toward their family and community roles, followed by chapters on health, income security, work and leisure, family relations and living arrangements, and participation in friendship, religious, recreational, and educational groups. Here the several facets are presented in terms of the national picture filled in with Prairie City data. Part II is a more intensive account of the Prairie City study employing a similar arrangement of the local material.

Three appendices are used to present four instruments developed by the Committee to measure: public opinion regarding older person roles, the roles older people actually assume, activities and attitudes (the Burgess-Cavan-Havighurst inventory), and adjustment. Data collected through country-wide and Prairie City samples are woven into the analyses. The instruments are available to others who may wish to use them for studying particular groups or communities.

The testimony and the activities of the older people who come within the purview of the investigators demonstrate that there are very few generalizations that can be made about the aging or aged as a group. Hence, one of the contributions the book makes is that of destroying a number of rather widely-held clichés.

Variations, ambivalences, and contradictions appear with reference to almost every phase of the situation examined. The approval-disapproval ratings on older person roles reveal that young and middle-aged adults prescribe more activity for older adults than do the older adults themselves. And, curiously, there seems to be a tendency for older persons to withdraw even though good adjustment and happiness are associated with social participation.

Much of the discussion naturally centers around the questions of work and leisure time. Retirement is socially approved, particularly when it removes older workers from competition with younger ones. On the other hand, acceptance of welfare grants by those able to work is not approved. Paid work is retained or sought by a good many not only as a source of income but also because it may satisfy as many as seven other important needs (p. 109).

A particularly provocative phase of the analysis relates this latter point to the industrialization of the economy and the family with the consequent freeing of older adults from productive employment both outside and within the home. One of the great individual and social problems raised by the phenomenon of aging thus becomes the discovery and development of new activities and roles that will yield the satisfactions found by the worker and homemaker.

Some of the interviewees who have retired are finding substitutes in community service, in advancing their educational interests, and in assumption of greater citizenship responsibilities. This leads the authors to suggest that religious, educational, service and civic organizations need to give attention to finding ways to counteract the withdrawal tendency by providing new opportunities for personal development and service. A special phase of this problem is raised by the preponderance of middle and lower social status groups who have not had a tradition of constructive avocational interests.

Because of the traditional mutual dependence of adult generations in the earlier agricultural society, family relationships and living arrangements constituted another important phase of

the investigations. Today, according to the studies, the grown generations are expected to be mutually independent although maintaining affectional ties and interests. Considerable ambivalence is indicated, however, by the fact that living with married children and being supported by them is viewed with indifference or only mild disapproval. Practices of older people in Prairie City and in the country indicate that most older persons are making strong effort to avoid interference with their children and grandchildren.

Older People is an exceptionally readable book. While the treatment is largely quantitative, there is a good deal of case material that helps to keep the statistics alive. All students of gerontology, social and psychological scientists, welfare workers, adult educators, and community action groups will find this introduction to social gerontology useful.

CLARK TIBBITTS
U. S. Department of Health, Education, and Welfare

Rural Social Systems and Adult Education: A Committee Report. By CHARLES P. LOOMIS, Chairman, *et al.* East Lansing: The Michigan State College Press, 1953. viii, 392 pp. $5.00.

Adult education in its broadest connotation is assuming major proportions in the United States. The present status of general adult education, however, may be characterized as inadequately organized, financed and staffed. A great many people currently engaged in promoting and directing adult education are lacking in the essential skills and tools. Changes are occurring so rapidly in rural life so as to make the need for continuing education obvious. This in turn is reflected in the increasing interest of the adult population in improving their understanding of the major issues of the day throughout the world. These are some of the major points documented in this book.

The general nature of this book might best be described as a research monograph. It developed out of a recognized need on the part of several organizations and agencies for basic materials concerning the current status of adult education among rural people.

The Fund for Adult Education commissioned the Association of Land Grant Colleges and Universities to make the study and provided most of the financial support for it. However, substantial contributions in the form of professional services were provided without charge by the Division of Farm Population and Rural Life of the Bureau of Agricultural Economics, the Extension Service of the United States Department of Agriculture, and the Agricultural Experiment Station of Michigan State College (p. vii).

The study embodies an analysis of the adult education activities of eleven areas as follows: Public schools, argicultural extension service, farmers' organizations and cooperatives, service, professional and civic clubs, agencies of USDA, public libraries, church, universities and colleges, international exchange of persons, local government and politics, and mass media of communication.

Each chapter appears to be a discrete unit. This, of course, results in a great deal of dissimilarity among the units of study. For example the summary of chapter 9 (dealing with rural adult education through the church) is a set of recommendations for guiding changes in that institution. On the other hand the summary of the following chapter (chapter 10 deals with universities and colleges) is an actual summary of the empirical results presented in the body of the chapter.

A large part of the discrete nature of the units of study is due to two major factors: (1) The book is the product of fourteen professional people (not necessarily sociologists) and either individually or in pairs they were assigned the task of preparing a report for a specific organization or agency topic; and (2) No sociological framework or research model was developed through which to understand the adult education movement as it has developed and as it is developing in the United States. The sociologically uninitiated will have to gain an understanding of the phrase in the title "Rural Social Systems" from some other source than this book. It is alluded to in several places but its exact meaning and its relationship to the present study are not made explicit.

There are, however, threads of unity running through the entire study. "The sponsors of this study have directed that the focus of the inquiry be the following subject-matter fields: (1) International understanding for peace, (2) strengthening of democracy, (3) understanding and strengthening of the economy" (p. 4). Accordingly each organization or agency was asked whether or not it had a program or activity in these fields. Of considerable importance and serving to give unity to the entire study were three other questions: (1) "What other organizations do you work with, or through, in your educational work with adults?" (2) What form or forms did your best programs or activities take in the three fields? (3) In conducting the program or activity what procedures were used?

The major appendixes are noteworthy contributions to this research monograph. In the first place the questionnaire forms are presented in unusual detail. In like manner the sampling procedures employed in the various phases of the study are presented in considerable detail.

Other researchers will perhaps find a great deal of use for these sections.

Appendix A is a unique feature. It is entitled simply "The Contributors." A short biographical sketch of each contributor is presented. The social participation profile of the contributor and his family is then presented in graphic form showing channels of communication and intensity of contacts at various levels of interaction. The object of this section is "that of suggesting the nature and varieties of the channels of communication in a number of the types of farming areas of the United States."

SELZ C. MAYO
North Carolina State College

Needed Urban and Metropolitan Research. Edited by DONALD J. BOGUE. Oxford, Ohio: Scripps Foundation for Research in Population Problems, Miami University, and Population Research and Training Center, University of Chicago, 1953. x, 88 pp. $1.25.

The delineation of "needed research" is not a novel undertaking, but most such efforts never get published and therefore are not available for use by those outside the staffs that prepared them. The fact that this one, at least, has been allowed to see light of day is in itself a contribution. There have been many sorties but no full-scale attacks against the problem of stating what kinds of research might best add to our theoretical and practical knowledge of urban society. Special committees of such organizations as the American Institute of Planners, the Social Science Research Council, and other interested groups have tackled the problem from time to time. Practically every urban research institute, bureau, or center has nibbled at the subject with intent to interest possible sponsors. All have felt a strong necessity to establish research priorities so that available research funds could be directed toward maximum results.

The editor makes very clear what the publication is and is not: "a manual, assembled within a comparatively short time, intended to advocate a new attitude toward urban studies, to create discussion, and to get more research work started in some critically important areas." In the Foreword, Philip M. Hauser deals briefly with the subject of joint operations by social scientists and social engineers.

This particular volume approaches the subject of needed research in two ways. First, it reports abstracts of discussions in a 1953 Seminar in Population, Urbanism, and Ecology. Contributors include Harvey S. Perloff, specialist on education and research in planning, on "Comprehensive Planning"; Harold M. Mayer, a geographer-city planner, on "The Internal Structure of Cities and Metropolitan Areas"; Joseph D. Lohman, a sociologist, on "Redevelopment and the Control of Slums and Blighted Areas"; Donald J. Bogue, urban sociologist and demographer, on "Decentralization and the Growth of Suburbs"; Elizabeth Wood, a city housing administrator, on "Public and Private Housing"; Walter H. Blucher, former Executive Director, now consultant, American Society of Planning Officials, on "Control and Reduction of Transportation Congestion"; Robert E. Merriam, an enlightened city alderman, on "Integration and Improvement of Metropolitan Government"; and two Professors Emeriti of sociology, Ernest W. Burgess and William F. Ogburn, on "The Ecology and Social Psychology of the City" and "Needed Urban Research Studies," respectively. It was the editor's good fortune to have available, in Chicago, such contributors of national and international reputation.

The second approach is via well over one hundred specific research proposals dealing with the subjects discussed by the contributors. These proposals, prepared by the editor, are in addition to numerous others suggested in less detail throughout the abstracts. Each proposal consists of a general statement on the area to be studied and some suggestions for appropriate methodology. Nearly all of the editor's proposals would, if properly pursued, each take at least a year to complete. There can be little doubt about the projects in terms of their being crucial and urgent; one hundred and fifty man-years of research on these projects would be a productive investment if the objectives of the research materialized. Many of the projects are deceptively easy on first reading, but most could be subdivided or made the subject of team research and thus become manageable. Such problems emphasize the continuing lack of coordinating media, although there have been some successful attempts, as in the case of a recent Highway Research Board series of studies on urban parking problems.

Both the abstracts and the research proposals imply that "(a) Case studies of single cities should give way to comparative urban research. (b) City planners, municipal officials, and civic organizations are more appreciative of the potentialities of social science research than they formerly were. Many social scientists, on the other hand, have very little appreciation of the opportunities for cooperative work in the urban field. (c) Sound planning can depend on nothing less than scientific knowledge or inferences based on such knowledge, and planners are coming to realize it. If this solid foundation for

public action is to be established, social scientists must provide it, but many of them are unaware that the time to start doing it has arrived. (d) Although the intensive economic, ecological, and population research of recent years still leave unanswered many vital questions, the really neglected area, where knowledge is most needed, is the social psychological aspects of urban life and livelihood. Almost all experts agree that present technological developments give urban residents, perhaps for the first time, a latitude for choice. Planning that fails to take account of how those choices will be made, or the values upon which they will be based, will fail—both functionally and financially."

Careful reading of the abstracts and the project proposals cannot but impress one, first, with the pipsqueak progress in urban research to date, and secondly, the extreme urgency—in the interest of gains on both theoretical and action fronts—of undertaking the kinds of studies proposed. This publication should be helpful in focusing research activity in such directions.

GERALD BREESE

Princeton University

The Rural-Urban Fringe: A Study of Adjustment to Residence Location. By WALTER T. MARTIN. Eugene: The University of Oregon Press, 1953. v, 109 pp. $1.25.

This carefully designed study is a welcome addition to the small but growing number of empirical studies about the rural-urban fringe. The author correctly assesses previous studies in this field (in Flint, Cleveland, Madison, Janesville, and Milwaukee) as being deficient in sampling control and in conceptualization, and attempts to avoid these shortcomings in the present study. Of 960 attempted interviews, drawn in a random area sample, 86.7 per cent were completed. Two hypotheses were tested. The "accessibility" hypothesis which holds that "the extent of satisfaction of family members with the location of their residence varies directly with the degree of accessibility of the center (of the city) to that location," and the "sociocultural" hypothesis which states that "those individuals expressing satisfaction with the location will be characterized by common antecedents and other attributes which differentiate them from those that are dissatisfied with the location." Twelve corollary null hypotheses were tested as means of verifying the major hypotheses.

Three schedules were used to gather the data: (1) a background inventory; (2) F. Stuart Chapin's social participation and social status schedules, and (3) a Rural-Urban Residential Preference Scale (RURP) designed by the author, employing the Guttman technique. The last mentioned showed a reproducibility of about 87 per cent. The universe designated is ". . . the unincorporated country-side interlaced with motor roads and inhabited mainly by former urban dwellers . . ." immediately contiguous to the cities of Eugene and Springfield, Oregon. Because the study was primarily concerned ". . . with the adjustment of fringe dwellers to location of residence in the fringe area . . ." the background factors were of incidental importance and will not be reported here beyond the statement of the fact that the Eugene-Springfield study corroborated findings of several earlier studies where comparable data were sought.

Chi square, at the .05 level of significance, was employed to test the null hypotheses, and the strengths and weaknesses of this popular statistical device were evidenced. Aware of the fact that the chi square scores do not, by themselves, indicate direction of deviation, the author logically pointed out the consistency of directional (+ or −) deviation from the expected cell frequencies as "indicating" or "suggesting" significant relationships. It is also to be noted that a casual reading of the study might lead to the erroneous inference that the rejection of a null hypothesis validates its positive counterpart. It would have helped if the author had made this point more explicit.

The study concludes that the following factors, situations, statuses, and roles are positively related to good adjustment to residence in the rural-urban fringe: being male, middle-age, and of certain occupational statuses; high income and social status; membership in formal organizations, especially fringe area associations in the case of the male, and early years experience in nonurban communities; adequate living facilities with modern conveniences, the ownership of a larger than average plot of land, the use of some of this land for a garden, and modern household facilities for the woman. Despite the plausibility of the first major ("accessibility") hypothesis, the study led to the conclusion that ". . . in general, it (accessibility) is not a crucial factor in satisfaction with residence location in the fringe."

The author recognizes that "some of the more tenuous hypotheses are little more than hypotheses for further testing," and that more knowledge of urban adjustment in general is requisite to more specific information about the adjustment factors in the fringe areas. The study, drawing upon but adding significantly to the early studies, leads the way toward uniformity of construction of concepts, hypotheses,

and sampling procedures which must come if we are to derive valid generalizations from fringe area studies.

RICHARD DEWEY

University of Illinois

World Population and Production: Trends and Outlook. By W. S. WOYTINSKY and E. S. WOYTINSKY. New York: The Twentieth Century Fund, 1953. lxxii, 1268 pp. $12.00.

The publication of this monumental study of world economic forces and trends is an event of major importance to social scientists everywhere. Unlike many other studies covering a wide range of materials, the volume has been compiled and written by its two authors without the assistance of collaborators who are specialists in their various fields. This fact helps to explain the remarkable unity of the book and the avoidance of unnecessary repetitions which so often mar compilations of a cooperative nature. The reliability of the book from the point of view of scholarship is attested not only by the ability and training of the authors but also by the fact that their research was administered by the Twentieth Century Fund and Johns Hopkins University.

Vast as is the scope of the present volume which covers materials related to population growth and the changing patterns in the economic world, this study of world economic forces is to be completed by the publication of a second volume dealing with international trade, transportation, political organization, public finances, and international cooperation. The central theme of this world survey is the progress of western mechanized civilization as it comes into contact with more primitive techniques and destroys long established customs and institutions. The recent economic advances made by various countries throughout the world and the effects of these changes upon their welfare and ways of life are measured, insofar as this is possible, through all available statistical data. While the authors' purpose is sharply limited by inadequate data in many countries, they have been able to furnish the broad outlines of recent trends in the world's economic structure.

This volume is not merely a statistical compilation following the pattern of a yearbook. Each chapter begins with a historical statement that provides a setting for the array of known facts that are presented in tables, graphs, and maps and are accompanied by explanation and interpretation of their validity and significance. Then follows a summary of current trends which includes the authors' judgment concerning probable developments and changes in future years.

In a volume of this size crowded with economic data in a wide number of fields, it is impracticable in a brief review to give an adequate picture of the wealth of material assembled. All that can be done is to call attention to a few representative facts and conclusions which will reveal the scope and nature of the book.

The materials in this volume are discussed under five main divisions: man and his environment, world needs and resources, agriculture, energy and mining, and manufactures. In the 260 pages devoted to a discussion of population problems, the authors have brought together from a wide variety of sources the existing data concerning world population and have made available to students in this field comparative materials that ordinarily are not readily accessible. The section begins with the geographical factors that are largely responsible for the concentration of two thirds of mankind in less than 8 per cent of the total land area. With the aid of various graphic devices there are presented data covering population densities, distribution of people by country, race, language, and religion, composition of population by age and sex, birth, death, and marriage rates in countries where such data are available, the trend toward urbanization, and the role of migration throughout the past as well as at the present time. After presenting a summary of past attempts to forecast future population growth, the authors state that the period of rapid population growth is approaching its end and that by the year 2000 world population will be stabilized at approximately 3,250 billion.

In the section dealing with world needs and resources there is an illuminating discussion of consumer needs and standards of living. It is pointed out that in regions with a primitive economy with little industrial development, food accounts for as much as 80 per cent of all consumption expenditures. In such areas low standards of living are widespread and more than half of the people have insufficient food and face the danger of extreme poverty. The struggle for better living conditions has been most successful in nations that have utilized modern technology in developing their resources. The international contrasts in national income as well as in per capita income reveal the wide gulf between the rich and the poor nations, a gulf that may at least be partially bridged by the penetration of mechanized civilization into the undeveloped regions burdened with a surplus of agricultural labor.

The 300 page review of world agriculture with its 100 statistical tables and 75 maps and graphs gives an over-all picture of the basic occupation of farming which provides a living for nearly

three-fifths of the peoples of the world. In spite of the great steps forward in agricultural techniques, subsistence farming is still the dominant pattern in Africa and Asia. Commercial farmers are concentrated in northern and western Europe, North America, Australia, and New Zealand and comprise no more than one-fifth of the farmers throughout the world. While precise evaluation of world agricultural output is next to impossible, the available information makes it clear that the value of all farm products still exceeds that of all other raw materials combined.

The distribution of the farm population varies widely in different parts of the world. Nearly two-thirds of the world's farmers live in Asia while only a little more than two per cent are in North America. Subsistence farming accounts for nine-tenths of the agricultural labor in Africa, three-fourths in Asia, two-thirds in Middle and South America, one-fifth in North America, and one-tenth in Europe. In contrast to the amount of labor it absorbs, subsistence agriculture provides only a small fraction of the world's agricultural output.

In addition to these facts, the survey points out wide regional and national differences in the proportion of arable land, average size of farms, soil fertility, soil conservation, land tenure, agrarian reforms, agricultural methods, plant breeding, livestock, farm mechanization, agricultural productivity, and many other aspects of farm use and production. The authors state that during the past 100 years the increase in farm output has been more rapid than the growth of world population. The outlook for the future is, however, not too encouraging. To provide food for the expected billion increase by the year 2000, the amount of food production must be increased by 46 per cent. To accomplish this, much new land must be cultivated and yields per acre increased. This goal is not impossible, but the greatest problem is a larger distribution of food in the over-populated and under-developed areas of the world.

Since the beginning of World War I the value of the world's mineral output has more than tripled. Coal, petroleum, and iron dominate the world of mining, and in all these three fields the United States leads in both production and consumption. While coal no longer holds the almost exclusive post it had in the 19th century as a source of heat and power, it still remains the most important source of energy in the world. The unprecedented demand for petroleum in recent years has brought to the front the problem of exhaustion of oil reserves in future years. This is not a problem of the near future, but a shortage in a world-wide scale may develop before the end of the century. The authors predict that "the exhaustion of coal reserves is a matter of two or three centuries" . . . "If hydro-electric plants were to be established at all sites of falling water, . . . it could satisfy about half the current demand of the world" . . . "To sum up, exhaustion of the energy resources of our planet is a very serious question in terms of individual sources . . . but appears less grave when we take account of all sources of energy and their convertibility and interchangeability. The world is full of energy in amounts that exceed not only the needs of men but even their imagination" (pp. 979–980).

Of the estimated 165 million workers in the world's manufacturing and handicrafts in 1950, hardly more than 75 million were employed in industrial establishments that can be identified as factories. Among the countries for which statistics of such establishments are available, the United States ranks first in number of factory workers, number of large establishments, and value of manufacturing output. Next in order are Germany, United Kingdom, France, Japan, and Italy. Data are not available for the Soviet Union but it probably has about as many factory workers as the United States.

The concentration of modern manufacturing production is still further shown by the fact that of the net value of approximately 182 billion dollars of world industrial output in 1950, three-fourths of this were accounted for in North America and Europe.

While this volume is a world survey, it is heavily weighted with data from the United States. One out of four tables and graphs and maps set forth American materials, and judging by the items listed in the index, as much space is given to the United States as to the combined countries of Europe together with Canada. This emphasis upon American data is justified by American dominance in the economic world as well as by the wealth of material available. The discouraging aspect of a survey of this kind is the lack of comparable data in nations where reliable statistics are not in existence. And it is disappointing to the reader to discover the dearth of information about countries in Asia, Africa, and South America. This of course is no fault of the authors. In fact, in order to have as comprehensive coverage as possible, they have sometimes included data of doubtful validity and comparability, but when this is done, care is taken to warn the reader.

This volume is not a reference book of value only when specific data are needed, but is a comprehensive discussion of economic trends and outlook for the future. It is also very readable since it is written simply and clearly without the use of the technical language characteristic of modern quantitative studies. Soci-

ologists as well as all social scientists will find this volume essential for a better understanding of world conditions.

JESSE F. STEINER

Arlington, Washington

Cohort Fertility: Native White Women in the United States. By PASCAL K. WHELPTON. Princeton: Princeton University Press, 1954. xxv, 492 pp. $6.00.

The increased birth rates during and since World War II have required much painful reappraisal among American demographers, as well as among their colleagues in northern and western European countries. Few social phenomena had appeared to be more susceptible to prediction than the course of population growth. Death rates were steadily being reduced, but the ultimate limit of that decline was readily apparent. International migration was generally so small that it presented little difficulty for any projections. The course of the birth rate appeared to lend itself to prediction with a high degree of confidence, for the birth rate had been declining since the beginning of the nineteenth century.

The available statistics for the nineteenth century were not entirely adequate, but the direction and magnitude of change seemed clear. During the first half of the twentieth century there were marked improvements in the available data, both from birth registration and from census enumerations. These data lent themselves to the development of refined measures of population trends, and made allowances for changes in the age composition, sex ratios, and death rates. That they generally tended to extrapolate into the future the developments of a recent time period was noted, but in the light of the long time trends that had been observed this did not appear to be a major problem. There was virtually unanimous agreement that human fertility was increasingly subject to voluntary control, but it took the sharp reversals of economic developments of the 1930's and 1940's to demonstrate how effectively that control is now being exercised, and how quickly the number of births responds to changing economic and social conditions.

In 1928, P. K. Whelpton had published the first of a series of cohort projections of the population of the United States. Since then he has made major contributions to the methods of fertility analysis and population projection. For some time he has been urging that information about the cumulative fertility of "cohorts" of women is necessary as a basis for determining the extent to which first births (or births of other orders) have been postponed, made up, or even anticipated during a given time period, and the degree to which recent changes represent changes in timing of births rather than in total fertility.

The long time decline in fertility is effectively shown in the rates he has computed: Women born between 1875 and 1879 produced a total of 3,500 children; the next generation, those born between 1900 and 1905, produced only 2,435 by the time they had reached the end of their childbearing period. The decline in the number of women who bear four or more children is strikingly shown by these new rates; for women who reached age 47 between 1922 and 1950, the proportion bearing five children declined from 316 to 156 per thousand. For eighth or higher order births these proportions changed from 384 to 126 per thousand.

This book is a model in many ways. The meticulous work that has gone into the large body of tabular material comes into perspective through Whelpton's detailed discussions of the gaps in the data and the methods by which they were overcome. Sources of errors in the basic materials, the hypotheses used to overcome deficiencies, and the assumptions by which missing data were estimated are all clearly and fully discussed. The data on which the analysis is based are given in full. Anyone who may prefer to set up different models for measuring the extent to which births may have been made up or anticipated in recent years will find here the basic materials with which to make his own computations. As an illustration of careful scientific work in the social sciences, as a source book of hitherto unavailable data, and as a stimulating approach to a study of population trends it will occupy an important place in the working materials of demographers and the many others for whom population trends are important data.

CONRAD TAEUBER

Bureau of the Census

Recent Trends in Occupational Mobility. By NATALIE ROGOFF. Glencoe: The Free Press, 1953. 131 pp. $4.00.

This is a study of occupational mobility the measure of which is intergenerational, a comparison of the occupation of sons relative to the occupation of their fathers. The data, obtained from marriage license applications in Marion County, Indiana, in 1910 and 1940, provide materials for comparing occupational mobility rates in the early years of the century with corresponding rates thirty years later. The principal theoretical consideration is that of examining the relative openness of the social structure, defined in terms of intergenerational

mobility, at these two periods. While Miss Rogoff claims that her chief contribution is the methodological one of devising the best measure to date of the *amount* of mobility, she justifiably alludes to the theoretical implications of her work. Substantively, she examines variations in mobility rates with respect to age, racial and nativity groups and draws several conclusions at variance with earlier findings.

Miss Rogoff points out that earlier studies of occupational mobility have failed to control the general availability factor (number of available jobs in a category) with the net result that the other mobility component, that due to personal factors (e.g., education, ambition, "pull") or group factors (e.g., race, ethnicity), has not been accurately evaluated. To separate these two mobility components and thereby get a measure of social structure openness (which Miss Rogoff calls social distance mobility), the following formula is used:

$$\text{Social distance mobility} = \frac{x_{ij}}{R_i C_j / N}$$

where x_{ij} is the measure of actual mobility and the denominator is the measure of the mobility that would take place if only availability factors were responsible for movement.

Since occupational movement takes place not only from one generation to the next but also from one point of time to another in one's career, it is important to know for what point in the son's career his occupational status is reported. Consequently, the son's age was controlled by computing age-specific mobility rates, which enabled the researcher to focus on the age at which mobility relative to the father becomes most evident for sons and to effect further refinement in the study of movement into occupations whose requirements are related to age.

The sample, consisting of "twenty-one thousand residents of Marion County, Indiana who applied for marriage licenses in their home county," is of a community characterized by broad diversification in occupational structure. The process of trimming down the sample to fifty-seven per cent of its original size, to eliminate as many biases with respect to mobility as possible, is clearly described and typifies the over-all statistical sophistication of the author.

Major findings of the study are:

(1) The likelihood of a son's moving out of his father's occupational class was about the same in 1910 as in 1940.

(2) The occupational origins of the sons influenced their eventual occupational destinations more than they influenced occupational movement out of their fathers' occupations, especially in 1940.

(3) Although about seventy per cent of the sons were in occupations different from those of their fathers, in both 1910 and 1940, the father's occupation was the most frequent single destination of his son.

(4) Skilled work ranked lowest rather than highest in occupational inheritance when controlled on the two factors: proportion of sons originating in the various occupations, and proportion of positions available in each.

(5) The incidence of occupational inheritance among Negroes was less than among whites, except in the proprietor category where the situations were substantially the same. The likelihood of a son's becoming a laborer regardless of his father's occupation was generally high among Negroes.

(6) In 1940, sons of foreign-born fathers outshone sons of native-born fathers by filling more professional and proprietary positions and fewer manual and service jobs. In 1910, the two groups of sons showed practically the same distribution in these types of positions.

(7) In the relation of age to mobility, 1940, compared with 1910, was a period when (a) young men got fewer mobility "breaks" as professionals, proprietors, or clerks; (b) men between twenty-four and thirty were slightly less likely to be downward mobile; (c) men over thirty enjoyed greater upward mobility and were less likely to move into manual and service jobs; and (d) "interchange" of sons among the white-collar classes was less.

(8) The two periods, 1940 and 1910, were alike (a) in reserving occupations calling for experience, advanced education and financial resources for older men; and (b) in placing younger men predominantly in new occupations and those requiring little experience and training.

E. William Noland
University of North Carolina

Executive Leadership: An Appraisal of a Manager in Action. By Chris Argyris. New York: Harper and Brothers, 1953. xv, 139 pp. $2.50.

This is a human relations case study of an industrial executive's experiences with his twenty subordinate supervisors. The plant of about 600 employees is relatively stable in terms of personnel turnover. Nearly all the managers have come up through the ranks and lack college training. The report is in non-academic language and is directed chiefly to executives.

The first part of the book contrasts the author's view of the executive (leader) in action with the leader's view of his own functions and of the motivation of his supervisors. Interview excerpts are then presented showing

supervisory attitudes toward the leader. Later chapters and appendices deal with the emotional state of the supervisors, suggestions as to what other leaders may learn from this analysis, methodology, and an attempt to develop a theory from this and other reports.

The book is organized around a conception of organization as possible only when certain processes are in operation. These minimum processes are reward and penalty, communication, authority, identification, workflow, and perpetuation (renewal of men, materials and ideas). The processes operate simultaneously and interdependently; i.e., no single process can operate effectively without the others. Since all the processes excepting workflow are dominated by the leader, his supervisors are dependent and hard put to operate without him. Hence, regardless of how "democratic" his behavior in current industrial structures, his subordinates remain dependent on him and compete for his favors. Industrial organizations need to be redefined, because at present they restrict the developing personality. The individual has multiple abilities and sentiments, and needs, therefore, to express himself as completely as possible rather than in the fragmented way now required in industry. If genuine cooperation is desired, a balance must be struck between the organization, which must achieve its ends, and the individual, who lives to realize his needs.

In generalizing, Argyris probably attributes too much to the evils of the dependency relationship. By ignoring the literature on personality in bureaucracy and in stressing the conflict between personality and organization he gives the impression that only industrial organizations have such problems. In our changing world all organizations need redefinition.

Sociologists will feel that the emphasis on phenomena as arising from plant situations ignores outplant influences on such behavior as concern to rise in the organization, competition to please, and secretive conduct as a protective device, none of which appear only in industrial structures. Also the statement that foremen are selected on the basis of behaving like the leader raises the question: what organizations, industrial or not, ignore clashing personality traits when considering prospective members?

The assumption made that if supervisors become "group-centered" they will become "organization-centered" is probably more relevant in small than large organizations where rifts result from functional and other differences. In the same way the thought that a predominantly self-directed group reduces the leader's work load should square with group behavior in large plants in which, in significant cases, the group of necessity develops considerable self-direction (because the leader is tied up in meetings many hours daily) yet involve the leader and themselves in trouble.

The theory of organization is useful and the data are provocative. It is important that research shows the gap between managerial behavior in this relatively small plant and larger plants to be less than often thought. Among practices reported here that are almost typical of large plants, one should note: (1) the evasive charging of part of its costs by one department to another; (2) the screening of reports and camouflage of behavior to please superiors; (3) departmental identification with attendant interdepartmental conflict; (4) the use of written communication to escape blame; and (5) staff-line friction.

MELVILLE DALTON
University of California, Los Angeles

The Worker Speaks His Mind: On Company and Union. By THEODORE V. PURCELL. Cambridge: Harvard University Press, 1953. xix, 344 pp. $6.00.

Father Purcell's book is the result of a study of the Chicago Plant of Swift and Company and Local 28 of the United Packinghouse Workers of America, C.I.O. He lived for a year and a half in the back of the yards going to the workers "in a double capacity, as both psychologist and priest" (p. xviii). His interview material is rich and shows the freshness of a first-hand acquaintance with the situation.

The main problem which he posed is this: "Does the American worker offer a basis for converting the opposition of company and union into harmonious opposition?" He states: "My main purpose in this book is to seek an answer to that question from the workers themselves" (p. xviii). His central concern is, therefore, the plant community and workers' "dual allegiance" to company and union.

In the summary of his findings, Father Purcell states that nearly three-fourths of the men and women of the plant community do have positive allegiance to both company and union. He indicates that "for most of those who fail to have dual allegiance, allegiance fails in the union half of the plant community" (p. 264; see also pp. 78, 145). Father Purcell indicates that "dual allegiance is not under a strain for many workers, but it is for some" (p. 267). He traces the influence of sex, age, and race on allegiance and finds significant differences. He also examines the attitudes of stewards, union leaders, foremen, and management.

Incidental to the problem of dual allegiance, Father Purcell is concerned with work satis-

faction, participation in the union, union leadership, the wage incentive system and the grievance procedure. He shows the inadequacy of participation in the local union, emphasizes the fractional struggles within the local; observes the widespread dissatisfaction—or distrust—of the wage incentive system and the central role of the grievance machinery as an expression of the "dual government by company and union" (p. 280).

The interview material and general results which are directly derived from this material give a picture of the situation which is well documented. It is, incidentally, in harmony with findings in comparable industrial situations. The question which arises is, what is the human and scientific significance of the results and conclusions which Father Purcell derives from them?

The reviewer wishes to emphasize that the critical evaluation which follows is not a criticism of Father Purcell's basic idea of community—conceived as "a stable union of many people for a common end, using community means, with authority over its members" (p. 3, quote from St. Thomas of Aquinas). The reviewer accepts this conception, but raises these questions: What sociological and psychological content has Father Purcell given to it? Are the methods used adequate for his purpose? How are his conclusions related to his research findings?

Father Purcell defines company allegiance as "general satisfaction with the company as an institution" (p. 77), or an "attitude of favorability toward the company as an institution" (*ibid.*), or "general approval of the company and its policies" (*ibid.*). From a social-psychological point of view, such a conception of allegiance probes into a rather *undifferentiated area of feelings and thoughts.* It is a valuable first approximation to assess what underlies specific attitudes, but it cannot be considered to give any clear-cut ideas of workers' allegiance—clear-cut either in terms of an operationally defined concept *or* in terms of *meaning* which could be related to St. Thomas of Aquinas' concept of community.

As Father Purcell indicates himself, workers' allegiance to the company as an *institution* is influenced by many factors, even by some for which the union is responsible (see p. 87). And, even if we do not want to consider this point, we cannot avoid asking the question: What is the meaning of the company allegiance of a worker who says, "There's an old saying: 'Swift and Company would take your last ounce of blood and ask for another drop.' The union stopped that"—a response to which Father Purcell adds: "Curiously, Wyman (the worker in question) has clear company allegiance" (p. 158). The same must be said about "union allegiance"; it is a valuable tool for the assessment of an underlying feeling, but workers' attitude toward the union is only being assessed as more specific problems—such as seniority and grievance procedures—are being discussed.

In order to give sociological meaning to the basic concept of community—which explicitly states a "community of ends"—the power and value structure of modern industrial organization would have to be examined. This, however, Father Purcell does not do.

As regards the methods used, this reviewer feels that Father Purcell's intimate contact with the plant community gave him an excellent basis for his observations and insights. His interviewing methods are a mixture of non-directive and a well-structured approach. He uses about twenty foci of interest which are brought up in the course of the conversation. This is a good method provided it is handled well. (The information on interviewing methods was kindly given the reviewer by Father Purcell.) The results are scored along a five point scale ranging from "very favorable" to "very unfavorable." Scoring techniques, measures of variance, are well handled.

The main problem arises in regard to the allegiance from the workers *themselves.* In the central question posed by Father Purcell; namely, to get an answer to the problem of dual allegiance from the workers *themselves.* In order to be able to get such an answer from the workers, a conception of personality is needed which makes it possible to differentiate between "healthy" and "unhealthy" attitudes. The discussion of social psychological concepts underlying Father Purcell's book (pp. 273, 318–319) lacks the precision necessary for such a differentiation. Incidentally, Father Purcell states himself—to give just one example—that "some of the whites may use communism as a rationalizing cloak for their antagonism to Negro leadership" (p. 182). But he does not carry through this insight in his analysis and takes at face value statements with a striking resemblance to illustrative material in Adorno, Frenkel-Brunswik, Sanford's *Authoritarian Personality.* Father Purcell, who rightly emphasizes meaning, cannot therefore give any real meaning to his central concept of community. What is the meaning of the acceptance of a social institution by a person who shows typical authoritarian personality traits? "Drug addicts," to quote Father Purcell, "rarely complain of their drug, they come to like it, to need it" (p. 259).

The shortcomings in the sociological and psychological concepts and analysis manifest themselves clearly in the conclusions derived

from the material. Father Purcell states that "there is general satisfaction with (the) work in the plant community" (p. 122) and that the people "have *told us* that they *comprise a true industrial* community" (p. 280)—a true community in which there is "an inarticulate dissatisfaction with the tacit assumptions of mass production" (p. 257); and widespread "discontent and frustration" (p. 279) in regard to work; a true community in which most of the workers do not want their children to work (pp. 116–117)!

Father Purcell recognizes the inadequacy of the presently existing organization of industry to satisfy workers' deeper needs and aspirations, and hence form a "true community" according to St. Thomas of Aquinas. He advocates greater union security and increased participation through labor management committees, for "Swift has not even begun to tap the talent of its workers" (p. 279). But, again, he goes half-way, never raising the question, "What are the ends of this cooperation?" What is the nature of the "dual government" through which the ends are achieved? "Work simplification, time study" and "increased productivity" are mentioned by Father Purcell. Without questioning the merits of such a cooperation, the present reviewer doubts that they will solve "the discontent and frustration in the plant community" brought about by "mass production" (p. 279) or the related problems mentioned by Father Purcell. Nor will they give necessarily more meaning to "dual allegiance."

However, our over-all conclusion is that Father Purcell's book is full of valuable material with which every industrial sociologist should be acquainted.

FRED H. BLUM
University of Michigan

The Sociology of Work. By THEODORE CAPLOW. Minneapolis: University of Minnesota Press, 1954. ix, 330 pp. $5.00.

Not often do I quarrel with a title. Call your book what you like for all of me. But as a reviewer, and thus for the moment a responsible person, I must protest that this book deals with only a part of what I should call the sociology of work. Specifically, it has rather little to do with industrial sociology as that term has come to be used in our field—rather little to do with the relations of persons and groups within a formal organization. Instead it deals with the characteristics of occupations, focussing on four main types: the professions, the crafts, machine-tending factory work, and small retail merchandising. It is not too much to say that the book stops where industrial sociology begins—at the point where different occupations are coordinated in a firm.

This is not to say that Caplow is mistaken in his emphasis. An adequate sociology of work will include what he includes as well as what the industrial sociologist does. The latter's concentration on the factory and on repetitive work is just as false to the whole picture of gainful employment as Caplow's is. We are just beginning to learn that there are big social differences between the big firms themselves—between a mine and a mint, a factory and a refinery. Nor is this to say that Caplow is unsophisticated as an industrial sociologist. As many of his side remarks show, he could be a good one if he wanted to, but he does not want. He is perhaps a little lightminded in dealing with subjects close to the heart of the industrial sociologists, for instance "informal organization," saying that "in the long run, these informal organizations do no more than soften the impact of rationalization" (p. 24). I think I know what he means, but it sounds funny as it stands. It could be argued that informal organization is what makes any collaboration possible.

No book should be attacked for not doing what it never tried to do. What does Caplow do? He deals with the division of labor, the characteristics of the American labor market, the choice of an occupation, the social status of occupations, mobility between occupations, the codes of occupational groups, and the nature of occupational organizations, particularly labor unions. In treating each of these matters, he shows scope, clarity, and sense. A good word for him is *just*, in the French sense: he sets many things quietly straight. The chief difficulty I find is that, with some of these subjects, notably occupational status and social mobility, he is in competition with books, in this case books on social class in America, where the problems can be treated much more thoroughly than he treats them. But not necessarily more sensibly. What he does say here is of crucial importance, particularly the point, which I believe myself but which has never been stressed enough, that the one indispensable determinant of status is control of the behavior of others. Especially interesting I found his discussion of women's place in the occupations. I had not appreciated that "the proportion of urban women *permanently* employed outside the home appears to have unequivocally declined" (p. 234). Also his criticism of Parsons' acute but probably over-simple analysis of the relation between occupational and familial structures.

A man writing a book is under severe discipline, from which he craves escape. He may be forgiven if he sometimes lets his *obiter dicta*

get away from him. They serve the function, in writing, of the binge in ordinary life. A few of these amused me in Caplow. Speaking of lawyers and physicians, he says that "isolation may be carried to the point . . . where sociable contacts with laymen are consciously held to a minimum" (p. 126). As a lawyer's son in a medical family, I just don't believe it. Again, speaking of "several dozen studies of class structure," he says that "with disheartening unanimity, they show the slow crystallization of class structure into a more rigid form" (p. 257). I don't think they show this, one way or the other. Whether the American class structure is getting more rigid seems to me a question hard to answer and so far not answered. What disheartens me is the suspicion that some sociologists *want* to believe the worst about their own society.

But these are not blemishes, for they add, in a wry way, to the joy of life. This is a wide-ranging and hard-headed study of American jobs, their place and nature. It may be placed the hands of the young to their advantage. In short, it is *good*.

GEORGE CASPAR HOMANS
Harvard University

Freedom and Control in Modern Society. By MORROE BERGER, THEODORE ABEL, and CHARLES H. PAGE. New York: D. Van Nostrand Company, Inc., 1954. xii, 326 pp. $6.00.

This volume consists of a series of essays written in honor of Robert MacIver, a fact that is perhaps the sole thread tying the book together. As is sometimes the case, the title was no doubt constructed when all the essays were in the hands of the editors; it fits some and ignores others. The editors themselves begin their Introduction by telling us of three things the chapters have in common; they end the Introduction by providing us with three more. Their confusion is understandable. The variety of essays is indicated by three chapters nesting together in the second half of the volume: "The Demographic Foundations of National Power," by Kingsley Davis; "Social Change in Soviet Russia," by Alex Inkeles; and "The Utility of Political Science," by George Catlin.

It would be foolish then, to examine this book as if it really dealt with a single major theme—say, freedom and control in modern society. One had better turn to the book for the individual essays and forget the theme. You pay your six dollars and you take your choice.

There are fourteen essays altogether and it would be tedious to describe them all here. Perhaps the most unusual is a joint contribution by Robert Merton and Paul Lazarsfeld. Merton begins with a sixteen-page substantive analysis of friendship considered as a social process, an analysis that is drawn from his forthcoming book *Patterns of Social Life* (written with P. S. West and M. Jahoda). Whatever conclusions may be drawn about friendship as a general social process, one thing is sure: Merton's friendship with Lazarsfeld must have been put to a severe test by the latter's eighteen-page methodological analysis of Merton's essay. The victim then concludes with an "Epilogue" in which he discusses "seven kinds of clarification" resulting from Lazarsfeld's "formal restatement of the substantive account"—which he also refers to as a "harrowing experience." "If these remarks," he concludes, "also imply a tribute to the author of the formal analysis, that cannot be helped."

The entire essay ought to find a place as compulsory reading in courses on methodology, for the interchange greatly illumines some of the advantages and limitations of both the usual descriptive essay and the analysis that strives for full methodological rigor and precision. At least one reader bows in admiration to Robert Merton for collaborating in the production of a public dissection that many of us appreciate vastly in private but would be reluctant to submit to in full public gaze.

The most solid piece of social theory in the book is probably the chapter by S. M. Lipset, "The Political Process in Trade Unions: A theoretical Statement." This is a first-rate attempt to develop a series of reasonable hypotheses "about the functional relationship between different aspects of the social structure and the conditions for democracy or dictatorship in trade unions." If it were ever open to doubt, Lipset demonstrates decisively that the trade union furnishes us with a rich vein of material for the development of social theory, particularly theory concerning the general pre-requisites for various distributions of power along the continuum from political equality to dictatorship. Lipset's essay deserves to take its place with those parts of the works of Pareto, Michels, and Mosca that deal with this question. Lipset is, however, more careful, more realistic, and more aware of the complexity of forces that propel a social organization along this continuum than are the trio to whom one usually must turn for significant speculation on the problem.

Of the remaining essays, two struck this reviewer as particularly significant. In an essay, "Ethnic Groups in America," Nathan Glazer argues that "it is . . . rather simple-minded to think of the Germans, Irish, Norwegians, and Swedes as groups that easily assimilated to

the Anglo-Saxons" as compared with the newer immigrants—the Italians, Jews, and Eastern Europeans. It was, however, among these newer immigrants that "the violent turning away of the second generation from the life of the first —that intense passion for Americanization which so often characterizes children of immigrants, as well as large numbers of immigrants proper—became an important phenomenon." And now, says Glazer (following Marcus L. Hansen) it is the third generation of the "newer" immigrants that displays a reversal of the second generation reaction in its new interest in the culture from which its forbears came. Paradoxically, this "return" is often to a sympathy with a culture, or at any rate a nation-state, that had no existence when the first generation arrived here.

In "Social Change in Soviet Russia," Alex Inkeles asks: "What in the old social structure can the revolution sweep away almost at once, what basic social changes can it effect in a relatively short course of time, and what institutional forms and behavioral patterns are most persistent and may be changed by the revolutionary process only in the very long run, if at all?" In searching for an answer to this critical question, Inkeles describes with some care the extent to which Lenin and his heirs have been able to manipulate the social organism they inherited. Clearly the author of *State and Revolution* misunderstood the hard realities he faced. Among the most persistent survivals of the older society are "the traditional attitudes of the population to authority and authority figures . . . the common man's 'sense' of property, his attitude toward its accumulation, possession, and disposition . . . (and) . . . the kinship structure and the pattern of interpersonal relations within the family." Stalin's less Utopian aims brought about vast compromises with social imperatives in the areas of education, the family, abortion, law, social stratification, and psychology. "Indeed, it may be said that a characteristic of the last fifteen years of Soviet Rule has been the increasing precision with which the leadership has come to manipulate institutions and juggle situations in order to harness private motivation for the purposes of the regime."

As befits a volume of this kind, Harry Alpert appraises MacIver's contributions to sociological theory and David Spitz his contribution to political theory.

The opening essay, by the way, does deal with the subject suggested by the title. Gardner Murphy writes on "The Internalization of Social Controls," and while it is a most succinct and useful summary, it adds little new to what he has already said elsewhere.

ROBERT A. DAHL

Yale University

Max Weber on Law in Economy and Society. Edited and annotated by MAX RHEINSTEIN (Translated by EDWARD SHILS and MAX RHEINSTEIN). Cambridge: Harvard University Press, 1954. lxxii, 363 pp. $6.00.

The volume under review which is the sixth in the *Twentieth Century Legal Philosophy Series* is a translation of the chapter on the sociology of law from Max Weber's classic, but unfinished *Wirtschaft und Gesellschaft.* Very conveniently, a few other sections of the same work have been added by the editor, dealing with law or related subjects. Some of these sections have already appeared in English translation; but the translation offered in the volume under review is different. As the editor correctly says, "the divergence of the two translations may serve . . . as an illustration of the impossibility of literal rendering of Weber's German text." The present reviewer believes that the new translation is outstanding both as to readability and correct interpretation of Weber's involved ideas.

The editor has done much more than that: he has annotated Weber's text explaining many technical terms (commonly referring to German law and jurisprudence) and tracing back the possible sources used by Weber. These, more often than not, were not primary sources (statutes, collections of customs or judicial decisions), but works of outstanding scholars of his time. This is a counterpart to the fine and well known work performed by the translators of V. Pareto's *General Treatise on Sociology.*

Furthermore, Rheinstein has written a forty-five page long introduction in which, in addition to more or less known facts about Weber's life and work and *Wirtschaft und Gesellschaft* as a whole, he ably summarizes Weber's sociology of law. He underlines that Weber has shown that the "judge-centeredness" of Common Law is not a general feature of all legal systems, and offers an excellent systematization of Weber's ideas about law making and law finding. Weber obviously had the intention to apply to the twin problem his methodology of the ideal types; but the work never was finished, and we can only infer what ideal types he had in mind. Rheinstein has brilliantly performed that operation and offers the results in a table. Having in mind the corresponding categories, one can easier follow Weber's discussion of an amazing number of situations and processes and perceive how the ideal types of law making and law finding are related to

the economic order, to the forms of political life, to religious and magic beliefs and to the role of "legal honoratiores" (persons of high social prestige) in the molding of law. It is noteworthy that *all* the solutions of the problems of law making and law finding arousing heated controversies in America and Europe can be easily located in the Weber-Rheinstein scheme.

Since Weber's original appeared about thirty-five years ago, there is no necessity to outline its content. More interesting is the question what does Weber's work on law mean for the present day sociology of law? Of course, one has to acknowledge that Weber's sociology of law is much more a comparative history of law than a generalizing theory about law as part of social reality. To be convinced of that, one has just to read attentively Weber's statements about the four stages of the rationalization of legal thought and the directly following acknowledgment that in historical reality the theoretically constructed stages of rationalization have not everywhere followed in the sequence outlined (pp. 303–304).

Nevertheless, the value of Weber's contribution is great. He has shown a large number of dimensions of variability of the law; unfortunately, nobody has yet explored the manifold perspectives thus opened. But two of his central ideas have found access into the later development of the sociology of law. One is his understanding of the legal order in terms of probability which has been developed by the Uppsala school. Another is his convincing refutation of the idea that law is tantamount to the order of politically organized society (an idea recently repeated by Roscoe Pound in *Twentieth Century Sociology*) as well as his assertion that law must be enforceable by a "staff." These ideas, somewhat modified and generalized, have served as one of the backbones of the present reviewer's *Introduction to the Sociology of Law.*

N. S. TIMASHEFF

Fordham University

Society in Action: A Study of Basic Social Processes. By JOYCE O. HERTZLER. New York: The Dryden Press, 1954. xii, 452 pp. $5.25.

This volume is intended to be used either as an introductory text or as a basic text. In orientation it reverts to the concept of processes as its major frame of reference. Unlike earlier authors who concentrated on a handful of basic processes the writer aims for an exhaustive treatment. He sets out his objective under six headings. These are "(1) to identify as many as possible of the known universal and recurrent social processes; (2) to provide an adequate conceptualization of each with definition and description; (3) as indicated in the preceding section, to give a sufficiently comprehensive classification by major divisions and combinations of processes to indicate both the specific functional significance of each, and the interrelationship of all in the total societal operation; (4) frequently as a point of departure to analyze the nature of the major essential societal structures in which, and the structural conditions under which, processes operate; (5) to indicate, so far as possible, the known and proximate factors in the social situations out of which the structures and processes develop; (6) to determine the functions performed and the effects produced by the processes" (p. 14).

The volume attempts to take account of the recent work of people like Parsons and Merton by integrating the concept of processes with those of structure and function. In so doing the latter concepts appear as processes; one whole section of the volume is given over to "Societal Structuralization and Functionalization." These concepts have been extended further to provide a discussion of "destructuralization" and defunctionalization." One gains the impression that the author has labored to translate nouns and adjectives into verbs, and by sheer semantic shifts has added an extensive array of terms such as "culturization," "equalization," "ossification," and "normalization" to the traditional vocabulary of introductory texts. Many students will find this vocabulary more of a hindrance than an aid in understanding sociology.

Despite this criticism, much of the volume is well written. The sections dealing with Differentiation, Stratification, and Social Mobility represent a fresh approach to the writing in these fields. The book is a scholarly effort; the author has combed some fifty journals for materials and has provided fifty pages of references for the enthusiastic student. On the other hand, many teachers may feel that the volume is one-sided. The discussion of culture is extremely brief. There is almost no discussion of socialization or the related problems of social psychology usually treated in introductory texts.

Finally, the author has decided to incorporate almost no case material nor illustrative material in his presentation. As a result the discussion is perhaps a little too abstract for the general run of introductory students to handle.

OSWALD HALL

McGill University

The American Sexual Tragedy. By ALBERT ELLIS. New York: Twayne Publishers, 1954. 288 pp. $4.50.

Sex, Society and the Individual. Edited by A. P. PILLAY and ALBERT ELLIS. Bombay, India: The International Journal of Sexology, 1953. x, 448 pp. $7.50.

These two publications have one thing in common, namely, their concern with orgasm. From St. Paul's statement that it is better to marry than to burn, the contemporary discussion has advanced to the conviction that it is better to have orgasm than to burn. Remains the difficult problem of how to achieve this result in contemporary culture. The two books differ widely in their contributions to this question.

Albert Ellis has written one of those amusing books which castigate our mores from a singularly one-sided viewpoint. For such criticism, the American reading public has always been thankful. If contemporary family and sex behavior is scrutinized with the idea in mind that there should be a free outlet for sexual desires, there is, of course, no end of such diverting criticism as we stride from the womb to the tomb. Leaning back against the comfortable cushion of convention with a readiness to accept passive entertainment through vicarious experience, the book will hold our attention for a few chapters.

Surely, the author does not want us to consider his publication in this light. He is seriously fighting against sex repressions in order to increase happiness and to reduce tensions in contemporary society. As a matter of fact, many social problems—certainly all those which the author is capable of visualizing—are seen as avoidable by a generous application of psychotherapy, and there are not enough psychotherapists to go around. Under the circumstances, the outlook for a better society remains grim.

In a worthy manner, the book tries to alleviate some of the prevailing anxieties by reducing existing guilt-feelings. Primarily, this is accomplished by calling the reader's attention to the myth of a bigger and better vaginal orgasm. The literature is scanned to indicate not only that clitoral stimulation suffice to produce an orgasm in the human female, but that any other orgasm is nothing but a figment of our collective imagination. By the way, some writers of the second volume agree with this conclusion; others don't. This writer is not capable of deciding the issue on the basis of empirical verification.

As an interesting problem for general sociological thought, there remains the question of whether it is possible to raise even the outlines of a better society from reflections on a single aspect of modern life alone. We have here a good example of utopian thought! Such thought is found also among architects who may be intent on building a better society around a better design of the family home, around adequate and efficient home appliances, or a site plan which serves the purposes of full family living. It is found among lawyers who want to improve mankind through improved legislation, and among those industrial relations experts who see a panacea and an ultimate social bliss in the promotion of primary group relations in the factory.

Albert Ellis constructs his utopia around the idea of alleviating unnecessary anxieties arising in the intimate relations between men and women. Unnecessary anxieties no doubt are rampant in modern society, and they would have to be eliminated from any conception of the "ideal society." But can utopia be attained by psychotherapy alone?

The other volume under review leaves the sociological expert with a woeful feeling of ignorance regarding the physiological basis of sex. This in spite of the tremendous importance of sexual behavior for the structure and survival of social institutions. It is composed of articles from the journal, *Marriage Hygiene,* and its successor, *The International Journal of Sexology.* Under the editorship of the Indian sexologist, Dr. A. P. Pillay, and of Havelock Ellis and Norman Himes, the former journal was "dedicated to the proposition that sex is here to stay, and that its writers and readers might well form themselves into a brotherhood of clean thinkers and bold fighters against prejudice, evasion, and meaningless tabus" (Preface p. vii). The tenor of the individual articles, by the way, is scientific, though largely based on clinical experience.

The forty-five contributors cover a wide field of sexology. Most of these articles are mainly of historical interest. The sociologist discovers his own dependency upon knowledge gained in physiology and in psychology for understanding sexual behavior.

Of particular interest are the problems of male potency and female orgasm capacity. We owe to psychoanalysis the view that deficiencies in these capacities result from fixations and other neurotic complications. It would be wrong to overlook, however, those voices which consider strongly the physiological, possibly hereditary, basis of inadequate sexual responses. If the sociologist is to remain a borrower from other social sciences, that is, if he is not to turn sexologist entirely, he had better keep alert to such contributions which

yield him an improved understanding of those foundations or concomitants of contemporary society about which he cannot help but know very little from his own research. We should certainly like to have a definitive word about clitoral and vaginal orgasm. Only then shall we be able to assess fully the consequences of existing sex behavior, whether related to the dating or mating phase of the family cycle.

SVEND RIEMER
The University of California, Los Angeles

Art Under a Dictatorship. By HELLMUT LEHMANN-HAUPT. New York: Oxford University Press, 1954. xxii, 277 pp. $5.50.

The Social Function of Art. By RADHAKAMAL MUKERJEE. New York: Philosophical Library, 1954. xxiii, 280, xv pp. 21 plates. $10.00.

These two books are written against a background of diametrically opposite aesthetic ideologies. They are interesting case studies in the *Wissenssoziologie* of art in its relation to society. Lehmann-Haupt conceives of art as free, spontaneous, individual self-expression without social responsibility and without any necessary linkage to social realities. Although not very articulate from the academic point of view, he takes his departure from the Romantic doctrine of charismatic artistic creation in which the artist speaks in uninhibited fashion by a kind of divine right without reference to the requirements and wishes of the "lesser" society. Modern art, therefore, with all its distortion is a progressive sign, a symptom of freedom and maturity.

To Mukerjee, on the other hand, art is a social and community enterprise, binding society into a unity, exalting its traditions, and thereby giving security to both society and the artist. Individualistic art—as in religion and morals—is a contradiction in terms. To this author—who is Professor of Social Science in the University of Lucknow—Western art, with its splinter movements of "isms," and its sanctification of the freedom of the artist to express himself in unsocialized esoteric extremes, is a symptom of decadence hazardous to both society and the artist. This is sometimes erroneously considered a Marxian approach.

But such a compact statement reproduces only the core, and hardly does justice to the respective manner and motive in the preparation of these volumes.

Lehmann-Haupt, as the title of his book indicates, purports to recite the terrors of Nazi regimentation in the realm of the arts. The factual details are in principle, if not in detail, familiar to the well-read American. One of the evil by-products of the totalitarian state (both Fascistic and Communistic) is its "bad art." Why is it bad? According to the author, it tends to be classic rather than progressive; it is understood by people rather than by the elite, it has a social purpose rather than being created "for its own sake." The modern artist "has complete disregard for social intention" (p. 27) and is socially "autonomous" (p. 43). To the Indian sociologist, on the contrary, art is not autonomous, but rather "one of the most efficacious means of social control and guidance" (p. x); "it is an autobiography not of the artist, but of society" (p 57).

What the German author views as "progressive" is labeled decadent by the Indian professor. To the latter, Western art is a product of a mania for individualistic freedom (p. 212). Its support by the institution of the dealer, wealthy collector and patron has brought decay to "true art." The conviction gains ground that its appreciation rests on special training rather than social insight (p. 217). Mukerjee even tosses a bouquet at the USSR which is attempting to re-integrate the artist within its total society. He adds, however, that Soviet art may also degenerate into formalism and standardization, and thereby cut off the inspiration which the artist requires (p. 224).

Art Under a Dictatorship does not presume to be anything but a narration of a series of tragic episodes in recent German history, and a plea and challenge to Democracy to preserve the "sovereignty" of art. Although the book is tendentious and circumstantial, it supplies a good field for sociological foraging. Mukerjee, however, does presume to write a sociological treatise. The content of the work is quite cosmopolitan, embracing world-wide illustrations of the arts meaningfully compiled by the author who is, of course, well known to the American sociological fraternity for his numerous works in economics and sociology.

The juxtaposition of these two books poses a neat problem to a sociologist who desires to be "comparative" and "objective." Both authors are consistent and effective within the framework of their ideologies from which, of course, they do not attempt to extricate themselves. As long as fundamental assumptions are common to both reader and writer, they do not rise to plague the reader; when their assumptions diverge, as they do in this instance, it is easy to point out doctrinaire assertions which violate the canons of scientific objectivity. Both these books are therefore more valuable for their derivative lessons than for their intended thesis.

JOHN H. MUELLER
Indiana University

Why Dictators? The Causes and Forms of Tyrannical Rule Since 600 B.C. By GEORGE W. F. HALLGARTEN. New York: The Macmillan Co., 1954. xiii, 379 pp. $5.50.

Why dictators? does not conform to the current vogue of explaining dictatorships largely in terms of the personal psychology of the deviant demagogue and his seduced followers. The author is not unaware of the role which the special personal qualities of the dictator can play in shaping the distinctive features of any particular dictatorship. He assumes, however, that the type of individual who may become a dictator is generally available in most populations, but ordinarily lacks opportunities for the political exercise of his peculiar talents. Hallgarten's emphasis is explicitly sociological, and he concentrates on the *social* conditions which favor the dictator's rise to power. He writes in the European sociological tradition which placed prime emphasis on political and historical sociology, and sought to understand the development and dissolution of large scale socio-political forms viewed in comparative perspective. By explicit acknowledgment of the author, his prime intellectual debt is to Max Weber.

The book's basic thesis is that there are typical social and economic conditions under which certain kinds of dictatorship arise. This proposition Hallgarten documents rather well. He also asserts, however, that these dictatorships were "indeed *bound* [to arise] *whenever* the basic situation repeated itself" (italics added). Unfortunately, the book does not present direct support for this assertion, and indeed gives little evidence of a concerted attempt to test the proposition. One is therefore left with the impression, unfortunately created by so many studies of this type, that the case presented rests entirely on an assemblage of confirming instances known to the author, whereas *disconfirming* instances which might significantly change the interpretation given have not been systematically sought or considered.

Although Dr. Hallgarten does not really answer the "why" question about dictators, he does do much to answer the "when" and the "how" questions about their rise and fall. He distinguishes four basic types of dictatorship: the "classical," illustrated by such figures as Caeser, Cromwell, and Chiang Kai-shek; the "ultra-revolutionary," represented mainly by Robespierre and Lenin; the "counter-revolutionary," including Lucius Sulla of Rome and more recently Franco in Spain; and, a more important variant on the latter type, the "pseudo-revoluntionary" dictator, outstandingly exemplified by Mussolini and Hitler. Limits of space permit here merely the sketchiest indication only of some characteristics of but two of the types. Further, in justice to the author, I must note that these type descriptions necessarily obscure the sensitivity which Hallgarten shows to individual variations and to the nuances of the concrete historical case.

The conditions seen as most favorable to the rise of the "classical" dictator are those of a developing money economy and the rise of the associated class of merchants, bankers, etc. Upon engaging in a struggle with city patricians and land-owning nobility, these classes have a need to widen their base of social support, and they seek the aid of the landless peasants or other disadvantaged masses. These in turn become a threat to the interests of the moneyed classes, who then seek a strong-man "savior" to curb the radical masses. Once established in power, however, the classical dictator will often terrorize the class which established him, and may turn to partial collaboration with the nobility. In contrast, the "ultra-revolutionary" dictator bases himself directly on the uprising of oppressed masses striking out against an arrogant upper class which has neglected or wholly disregarded demands for popular welfare. He is generally a primitive type who is out to "avenge the wrong," but once in power he often acts independently according to his image of what should be done rather than with any real continuing concern for what the people themselves define as their welfare.

Mr. Hallgarten's typology serves him reasonably well as a device for organizing the detailed and diversified descriptive historical materials he presents, which cover the full span of years since ancient times and include dozens of concrete examples. Its adequacy as analytical framework, however, must be seriously questioned. For example, by locating Leninist-Stalinist Russia and Hitlerite Germany in different categories he minimizes his opportunity for highlighting the *similarities* between the two as distinctively *totalitarian* dictatorships which seek to impose a special kind of élitist social order upon an existing traditional society. Despite such inadequacies, however, this book is a most useful source of comparative data on a vitally important form of socio-political organization. It will be of interest to all sociologists concerned with the political process and with comparative social structure, and should prove valuable as supplementary reading in courses on those subjects.

ALEX INKELES

Harvard University

Toward Understanding Germany. By ROBERT H. LOWIE. Chicago: The University of Chicago Press, 1954. ix, 396 pp. $6.00.

Toward Understanding Germany is Lowie's second book on contemporary Germany. The material for this study was assembled with the detachment, and evaluated with the empathy, which has become the badge of ethnological fieldwork. The present publication shows once again that the methods of ethnology can be applied successfully to complex cultures as well. If there is any difference between the approach of the ethnologist and the sociologist, it lies in the greater emphasis which the former places on the comparative perspective of culture as a whole. He gains such a perspective by virtue of his particular attention to the universal features of a culture as distinguished from its recurrent and unique aspects. Attention to these distinctions has contributed in large measure to the balanced and undistorted account which the author presents in this volume. He uses material culled from biographical and literary sources, interviews, direct observation, and correspondence to paint a portrait of the Germans and their mores as they relate to three items of interest: the German class structure, the German family, and the much discussed question of how deeply was, or is, Naziism rooted in German society.

Lowie's report on the Germany family is intended to offer an answer to the familiar hypothesis that the acceptance of a despotic government was the upshot of an authoritarian family system which predisposed Germans to submissiveness and dependence on an autocratic type of political leadership. Lowie's answer is in the negative: the German family is, by any available standard of comparison, not more authoritarian, perhaps less so, than the family of most European countries. In a similar vein, Lowie assembles facts, historical as well as contemporary, to show that antisemitism was not more popular in pre-Nazi Germany than in most European countries. He does find, however, two characteristically German manifestations. One is the tendency toward boisterousness, to take exception, to move between extremes of rejection and exaltation, to overstate a case, in short, the lack of personal balance. This Lowie ascribes to the absence of a uniform code of social behavior comparable to the standard of gentlemanliness which most Western countries evolved in the course of their recent history. Comparatively characteristic of Germans is also their keen awareness of rank differences not only between the major classes but also within each class. The section dealing with the principal strata of Germany makes not only excellent reading but it contains good observations and well chosen illustrative material.

When all the assets of this engaging book are considered, including the author's objectivity, his meaty style, and his consummate skill in using case material, mention must be made of one deficiency: one cannot understand Germany without explaining the stated modal traits of Germans and the political calamities which have befallen them. To state these things is not the same as to account for them. That the mentioned characteristics are not innately national need not be emphasized before a sociologically informed reading public. Nor can the two political crises which Germany experienced during this century be attributed to permanent factors in her social situation. This reviewer believes, as Lowie does, that extreme nationalism constitutes an historical episode and not a permanent national character. But to be valid such diagnoses require a sociological interpretation supported by pertinent facts of recent social and political history. That Lowie does not attempt such an interpretation may be due to the fact that his study is more firmly grounded in ethnological practice than in sociology and political science.

ERNEST MANHEIM
University of Kansas City

Theoretical Anthropology. By DAVID BIDNEY. New York: Columbia University Press, 1953, xii, 506 pp. $8.50.

This volume of essays embraces a wide variety of subjects ranging from personality, the concept of cuture, human nature, to the evolutionary theory, and the concept of myth. Several of the essays are reprints of papers published earlier. They generally move on the border of social anthropology, philosophy, and social psychology. Athough the argument of most chapters is presented on a high level of abstraction, the author is able to steer the discussion away from a pure casuistry of concepts. A critical review of the pertinent literature introduces the discussion of nearly each chapter, followed by a concise statement of the author's own view on the subject.

The general drift of the essays is toward a "realistic" interpretation of anthropological concepts, such as personality, culture, integration, and cultural crisis. The critique of the idealistic and Neo-Kantian, behavioristic and mechanistic theories of these subjects takes a prominent place in the book. The author likewise exposes the shortcomings of the "reductionists" who seek to construe social phe-

nomena from a minimum of categories, and the fallacy of the "culturalists" who view culture as "a level of reality which is, as it were, a *causa sui*, a process which is conceived through itself alone and which molds the experience of man as a member of society." Bidney rejects the positivistic view of history because of its dogmatic faith in records of facts as such, without regard to their origin in selective observation and interpretation; while he finds the idealistic conception of history incognizant of the natural factors in human affairs. Bidney identifies himself with "the humanistic, personalistic approach . . . which . . . stresses human freedom and intelligence and the role of persons, taken individually and collectively, in determining their cultural destiny." This theme permeates large portions of the book, including a chapter on "Normative Culture and the Categories of Value" in which the author develops the program of a normative science—the study of what ought to be and not only what is.

Sketchy as this report will have to be, it would be greatly deficient if it failed to mention the role which the author charts for anthropologists in the present period of world tension. "Upon the social scientists and humanists especially falls the task of providing a common ideological frame of reference for the relative perspectives of the contemporary world." While Bidney is aware of the futility of mere persuasion as a means to resolving the conflict between the Soviet system and its antagonists, he finds that the divergence is primarily one of means rather than of ultimate values. It is this common ground which gives anthropologists a particular opportunity to play their part in alleviating the conflict of the two systems. "Upon the anthropological, or social, scientists in particular falls the task of providing a common ideological frame of reference for the relative perspectives of the diverse, sociocultural configurations. What is needed above all is a theory of sociocultural integration which will provide a rational, as well as empirical, foundation for the ideal of a common humanity." "The appeal for world unity must be directed primarily to the scientists of the world as the group most potentially qualified for realizing this objective. Instead of the slogan 'Workers of the World unite,' or the implied, but not articulated, 'Politicians of the World unite,' we might substitute the call 'Scientists of the World unite.'"

ERNEST MANHEIM
University of Kansas City

Social Thought: From Hammurabi to Comte. By ROLLIN CHAMBLISS. New York: The Dryden Press, 1954. ix, 469 pp. $5.00.

Offered primarily as a textbook in the history of social thought this volume is a welcome addition to the literature. Rather than attempt to cover all men and times, Professor Chambliss has selected a few thinkers and periods that to him are among the more important and has made a reasonably full presentation of the background and ideas of each. His selection is divided into three sections: (1) Five Ancient Societies, which include Babylonia (Hammurabi), Egypt, China (Confucius), India, and the Hebrews of the Old Testament; (2) Greece, Rome and medieval Christendom, which is devoted to Plato, Aristotle, representative Romans, St. Augustine, and Thomas Aquinas; and (3) Early Modern, for which Ibn Khaldun, the Renaissance and Reformation, John Locke, G. Vico, and Comte are chosen.

Within each chapter the pattern of presentation is topical and includes sections on background, biographical data, sources, method, and ideas about human nature, the major institutional areas, social organization, social change and values. This inventory approach is very useful for ordering a maximum amount of information for each period and writer but inevitably limits the kind of analysis that can be made. It leads to an emphasis on what was thought about a wide range of topics rather than an analysis of basic conceptual schemes or theoretical structures. It also results in some lack of distinction between ideas about what ought to be and what is in the sense of an attempt to explain or account for a class of phenomena.

In the place of the conventional stereotyped questions and reading suggestions in other textbooks this volume contains a well prepared set of reading references made up of original sources in translation and the better known scholarly studies in the field. Further the textual material itself is well documented by references to both original and carefully selected secondary works. It is clear that the author is well acquainted with his data and has made full use of the available literature. For the serious student and instructor alike this volume will be a valuable aid to the study of the men and periods covered.

Professor Chambliss' book is distinctive for its quality of writing. All too seldom does one find in a book prepared for classroom use the well formed and smooth sentences, the clear expression, the easy movement from point

to point, and the general literary artistry that has been achieved here. While the style occasionally borders on the poetic in describing a time or place or even an idea, it does not overshadow the excellent content.

JOHN M. FOSKETT
University of Oregon

Power, Order, and the Economy: A Preface to the Social Sciences. By MARBURY B. OGLE, JR., LOUIS SCHNEIDER and JAY WILSON WILEY. New York: Harper and Brothers, 1954. xii, 852 pp. $6.00.

This text subtitled, "A Preface to the Social Sciences," was written for the use of students in courses designed to survey the social sciences or, more precisely, the fields of political science, sociology, and economics. The text is divided into four parts, the first of which is concerned primarily with the three concepts which form the title of the volume. Part Two is devoted principally to a description of those important social groupings which are the concern of the three disciplines: for example, community, class, caste, the primary group, and large-scale associations in sociology; nation, state, parties, and pressure groups in political science; and the family, labor organizations, and corporations in economics. Part Three is somewhat more theoretical, being a further consideration and analysis of the structures or groupings dealt with in Part Two. Part Four is devoted to a consideration of some major problems of modern society.

The authors of this volume had, it seems to this reviewer, two problems in writing this introduction to social science for students having no prior knowledge of this vast area. First, because it was an introduction, each author must have felt compelled to detail within the area of his competence those central subjects and modes of analysis unique to his discipline. The second problem, of course, was the objective of integrating the three disciplines for the student, presumably for the purpose of providing him with an organized view of society. These two separate problems, or objectives, while they are not mutually contradictory are at least in conflict. For given the physical limits of a textbook, the more comprehensive and exhaustive the treatment each author gives to his own discipline the less integration will be offered the reader; but the more concentration by the authors on the integration of the three fields, the less basic information perforce can be offered the student regarding the separate disciplines. Awareness of this dilemma led the authors, it seems, to attempt the integration through the use of the concepts which appears in the book's title. It is the opinion of this reviewer that this method of integrating the various disciplines concerned is not the most satisfactory. Integration might have been achieved more successfully had the economic, political and social aspects of a community, for example, been described simultaneously by the three authors rather than successively and separately. The burden of integration falls largely upon the concept of order, a good deal of the analysis dealing with dysfunction and net functional consequences. These two notions, of order and functional consequences, combine to produce a static analysis of society. While the text contains a specific disavowal of any identification of disorder with evil, yet the authors do not clarify for the student that order and disorder are not opposable. Surely it is as much a characteristic of society, as a system, to "disintegrate" as to maintain itself. Would it not be more accurate to speak of the varying degrees of stability of phenomena or relationships rather than describing them in terms of order or disorder? The profound importance of "disorder" as a developmental aspect of social organization is not explored for the student.

It is this reviewer's opinion that the shortcomings of this volume reside in the necessity of compromising between the twin objectives which the authors set for themselves. My general impression is that the book has real merit for the purpose for which it was intended.

ELY CHERTOK
University of California at Los Angeles

Societies Around the World. Vol. I and Vol. II. Edited by IRWIN T. SANDERS. New York: The Dryden Press, 1953. xii, 528 pp.; xii, 608 pp. $5.90 each.

For social scientists who have found their introductory students not ready for theory until they possessed an intimate knowledge of several peoples, *Societies Around the World* is a valuable two-volume study. It will be useful for many other persons, including the "general reader." The descriptions of how, when, and why people live as they do are fascinating.

Primarily though, these volumes represent the authors' own theory of how best to learn about society. Their theory is a combination of the case and the comparative. Selections have been chosen from many other volumes to give the student a well rounded review of a particular society. Introductory and transitional comments are intended to tie the read-

ings together in order that the society may be understood as a whole.

The six cases provide a basis for comparison. The authors think they represent "virtually the entire range of complexity known in human social groups." To aid the student in making these comparisons, the authors do give some theory "in advance." It takes the form of leading questions followed by twenty-one pages of textual summary of concepts about what a society is and what cultural change is like. Then the reader is introduced immediately to the case materials concerned with "The Eskimo." The first volume also includes sections on the Navajo and the Baganda and closes with a chapter entitled, "Some Social Science Generalizations."

In the second volume, three other societies are described, "The Chinese Peasant," "The Cotton South," and "The English Midlands."

The editor, assistant editor, and four collaborators who assembled the material for these volumes are all staff members of the University of Kentucky. They represent the fields of Sociology, Anthropology, and Geography. They have tried the method of teaching represented by these volumes. While the authors are satisfied with the results of their own pedagogical experience, no experimental attempt was made to evaluate this method; in fact, very little experimentation has been applied to college pedagogy in general.

The authors who developed this teaching device know what they hope students will acquire from it: a knowledge about cultures, a basis for comparing them, and an ability to analyze their own society's characteristics and problems. These are their multiple goals. The authors do well in their attempt, the publishers present the material in excellent format, and the engravings add to the reader's interest.

ROBERT L. SUTHERLAND
University of Texas

Intergroup Education. By LLOYD ALLEN COOK and ELAINE COOK. New York: McGraw-Hill Book Company, Inc., 1954. xv, 392 pp. $5.50.

It is assumed by the authors of this book that one of the notable trends in modern education is the addition of a fourth "R" to the traditional curriculum. This "R" is for "relations"—human relations. Acting upon this assumption, the Cooks have produced a textbook for use in the training of teachers, at all levels, in the field of intergroup education. This field, as they conceive it, encompasses race and ethnic relations, class relations, and international relations. The major emphasis is upon contacts across racial, religious and nationality lines.

The first two parts of the volume might be termed a "short course" in intergroup relations. Apparently heeding Myrdal's advice, the Cooks make their value premises explicit. Teaching the values inherent in our democratic life, and teaching teachers to teach these values, are their goals. Specifically, they wish to convey "the KVSJ complex of factors." The "K" represents knowledge, the tested findings of science. "V" is for values. The third factor, "S," represents skills in teaching intergroup education and in guiding "change action." "J" designates an intangible factor, sound judgment.

In Part II the knowledge factor is presented in a distilled but creditable summary. Successive chapters deal with group relations from early childhood through adulthood, with a chapter on the problems of minority youth intervening. Well-selected summaries of empirical studies give the student a first-hand look at the findings on which the authors' generalizations are based.

Methods of changing people through intergroup education are reviewed next. The coverage of a great variety of methods is comprehensive. It is questionable, however, that teachers will learn to use such methods as play therapy, sociodrama and community surveys from reading brief accounts of the use of these methods by trained therapists and researchers.

The final section includes a survey of current projects in intergroup work and an analysis of the educator's role in intergroup education. Unfortunately, this role is not clearly defined. It is suggested that the teacher should be a "moderate," but this advice is coupled with a devastating attack by Oliver C. Cox on Booker T. Washington as a moderate or "collaborative type" leader. Cox's point of view is countered with a brief statement by Myrdal favorable to Washington. But the scales do not balance and the length and vigor of the statement by Cox leave the net impression that the role of the moderate in race relations is not an admirable one.

Implicit throughout, however, is the idea that the teacher's proper role is that of an agent for "change action," fully committed to the implementation of the authors' values by action in school and community. Teachers who agree with the Cooks as to the implications of the American Creed and are willing to accept the action role will find the book useful. Those who disagree probably won't be teaching intergroup relations!

LEWIS M. KILLIAN
The Florida State University

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